Predictors of Hostile Attributions during the Transition to Parenthood

by

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B.A.Sc., University of Guelph, 2015

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE

in the Department of Psychology

University of Victoria

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Abstract

The transition to parenthood is arguably one of the most stressful developmental periods in the lifespan, with couples often experiencing increased levels of conflict and relationship distress. It is possible that deteriorating relationship functioning may be due to increases in hostile attributions made towards partners during this time period. In order to better understand how changes in hostile attributions occur within the partner relationship, this study investigated the extent to which hostile attributions made toward a partner increased during the transition to parenthood, as well as identified stable and fluctuating factors that influenced changes in hostile attributions (life stress, parenting stress, trait hostility, and depressive symptoms). In addition, gender differences of these factors influencing hostile attributions were explored. Ninety-eight heterosexual couples were included in the study, all of whom completed online self-report questionnaires during pregnancy, 1-year postpartum, and 2 years postpartum. Hierarchical Linear Modelling was used to examine how changes in stress predicted changes in hostile attributions, and whether these relations were moderated by trait hostility or mediated by depressive symptoms. More specifically, investigations included how increases in life stress and parenting stress influenced increases in hostile attributions over the transition to parenthood, whether increased stress levels interacted with high trait hostility to further increase risk of hostile attributions, as well as whether increased depressive symptoms longitudinally mediated the link between increased stress and increased hostile attributions. Results showed that increases in both life stress and parenting stress significantly predicted increases in hostile attributions for both men and women over the transition to parenthood. Trait hostility was not a significant moderator of hostile attributions for women. For men, increases in life stress were associated with increases in hostile attributions, but only for men who were low in trait hostility. Increases in parenting

stress were associated with increases in hostile attributions for men who had low and average trait hostility. Regardless of changes in stress levels, men who were high in trait hostility had high levels of hostile attributions over time. Depressive symptoms did not mediate the relations between stress and hostile attributions, and were a direct predictor of hostile attributions for men but not for women. This study adds to the growing body of literature on mechanisms of change in relationship functioning over the transition to parenthood. Future research should explore other factors that address why relationship functioning changes for women over the transition to parenthood, and should examine depressive symptoms in men and their subsequent effects on family systems. Future longitudinal research should examine child outcomes as well as conflict management between partners in order to ascertain the effect of hostile attributions on family functioning. Changes in hostile attributions also have important clinical implications, and health professionals should screen for high levels of stress, trait hostility, and hostile attributions in order to prevent possible relationship deterioration during the transition to parenthood.

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Acknowledgements

I would first like to thank my research supervisor, Dr. Erica Woodin, of the University of Victoria. Her mentorship during this process was invaluable to me, and I am inspired by her desire to support her students through the highs and lows of life. Her door was always open to provide her expertise, guidance, and wisdom when it was needed. I will never forget her kindness and I can only hope to be such an exemplary teacher and mentor in the future.

I would also like to thank Dr. Catherine Costigan of the University of Victoria for her tireless work by serving on my supervisory committee. Many thanks to Dr. Costigan for your comments, input, and support throughout this project. As well, thank you to Dr. Karen MacKinnon of the University of Victoria for graciously providing your input and time by serving as an external committee member for the defense.

Thank you to Dr. Stuart MacDonald for his success in delivering a crash course in statistical methods over email and through short meetings. His patience knows no bounds.

Many thanks to my friends in Victoria and to my friends in Toronto who have journeyed with me in this process.

Finally, from the bottom of my heart, thank you to God, my husband, and to my family back home in Toronto. Their unfailing love, support, and encouragement allowed me to dream and kept me going throughout all circumstances. This would not have been possible without them. Thank you.

Pauline Song-Choi

Introduction

The transition to parenthood has long been identified as a time of decreased marital satisfaction and increased levels of conflict (Belsky, Spanier & Rovine, 1983; Cowan & Cowan, 1988; Doss, Rhoades, Stanley & Markman, 2009; Lawrence, Rothman, Cobb, Rothman, & Bradbury, 2008). However, many questions remain regarding the underlying mechanisms through which these changes occur. It is likely that cognitive factors, such as the way in which partners perceive each other's behaviours during this time, may contribute to these undesirable relationship changes.

There is ample literature showing how hostile attributions toward another's behaviour may be an underlying reason for why these individuals engage in maladaptive behaviour (Dodge, Price, Bachorowski & Newman, 1990; Orobio de Castro et al., 2002). The phenomenon of hostile attributions leading to destructive behaviour is also documented in the intimate partner violence literature (Eckhardt, Barbour, Davison, 1998; Fincham, Bradbury, Arias, Byrne, & Karney, 1997; Foran & Slep, 2007; Holtzworth-Monroe, 1991). However, hostile attributions within an intimate relationship *over the transition to parenthood* have not previously been discussed in the literature. Do couples engage in even more hostile attributional thinking during this transition? Does the transition to parenthood put certain couples at risk for more hostile attributions toward one another? If couples do engage in this style of thinking, does this hostile way of relating continue over time? The literature shows that identifying the presence of hostile attributions may be paramount, as often hostile attributions can be a precursor to relational aggression, physical provocations, and other problematic aggressive behaviours (Eckhardt, Barbour, Davison, 1998; Fincham, Bradbury, Arias, Byrne, & Karney, 1997; Foran & Slep,

2007; Halligan, Cooper, Healy, & Murray, 2007; Holtzworth-Monroe, 1991; Mathieson et al, 2011; Werner, 2012).

One key factor that might explain increases in conflict over the transition to parenthood is the well-documented increase in stress that occurs during this developmental period (Belsky, Spanier & Rovine, 1983; Cowan & Cowan, 1988; Doss, Rhoades, Stanley & Markman, 2009; Lawrence, Rothman, Cobb, Rothman, & Bradbury, 2008). Indeed, researchers have found that heightened levels of stress can affect how partners view each other and react toward one another (Bodenmann, 2005; Bodenmann et al., 2010; Frye & Karney, 2006; Nonterah et al., 2016; Perren et al., 2005). High stress levels during the transition to parenthood may be particularly likely to activate negative cognitions and blame in partners.

The Transition to Parenthood

In their work "The Transition to Parenthood," Belsky and Kelly (1995) discussed various changes that occurred in the lives of 250 married couples in Pennsylvania over a period of seven years. Results from this study demonstrated that the first year postpartum was the most stressful time over the seven years measured, as parents wrestled through significant changes in their lives such as modified occupation schedules, decreased amounts of sleep, and a lowered frequency of sexual intercourse with their partners (Belsky & Kelly, 1995; Belsky, Spanier & Rovine, 1983). Belsky and Kelly (1995) found that in general, marital satisfaction of most couples decreased after the transition to parenthood. In their book, they described the journey of parents moving through the joy and anticipation of late pregnancy to the reality of caring for a newborn child. On the contrary, Cowan and Cowan's findings in 1988 showed how the transition to parenthood may not be a "crisis" as originally believed, but rather an abrupt change and adaptation to the life of parenthood, as most of the variance in marital satisfaction was accounted for in family domains rather than parenthood status. For example, couples who experienced the most martial satisfaction pre-birth, tended to be the couples who experienced the most marital satisfaction in the first two years post-birth (Cowan & Cowan, 1988). Regardless, it is clear that this transition is a time for couples to grapple with many changes in their lives.

Overall, couples transitioning to parenthood tend to experience a sudden decline in marital satisfaction in the first year postpartum – dipping most intensely by the 12-month mark, then continuing on a gradual but persistent decline (Belsky, Spanier & Rovine, 1983; Cowan & Cowan, 1988; Lawrence et al., 2008; Moel et al., 2010). Partners transitioning to parenthood experience a more rapid decline in relationship satisfaction compared to couples who have been married for a similar length of time but who are not transitioning to parenthood (Doss et al.,

2009; Lawrence et al., 2008). However, not all couples experience this steep decline, with a subset of couples who experienced increased relationship satisfaction over this transition (Lawrence et al., 2007).

As one would expect, increases in conflict and poor conflict management are related to less relationship satisfaction (Doss et al., 2009; Lawrence et al., 2008). Interestingly, in their longitudinal study of a community sample of couples, Cowan and Cowan (1988) found that from late pregnancy to approximately 18 months postpartum, 90% of couples experienced increased levels of conflict. Moreover, the frequency of observed negative communication (such as withdrawal, denial, conflict, dominance and negative affect) increased as relationship satisfaction decreased (Doss et al., 2009).

Why do parents experience this steep and sudden decline in their relationship and increase in conflict after the birth of the baby? Several researchers have posited varying theories to answer this question.

Stressors in the Transition to Parenthood

The transition to parenthood itself has been identified as a particularly stressful point in development. Partners rate their stress levels over the transition to parenthood as higher than partners who are not experiencing the transition to parenthood (Belsky, Spanier, & Rovine, 1983; Cowan & Cowan, 1988). Along with increases in stress, the frequency of positive interactions between partners tends to decrease, and average overall engagement between partners' declines from one to three months postpartum (Belsky, Spanier, & Rovine, 1983; Doss et al., 2009). The constant balancing and coordination of work schedules between parents in order to save on high childcare costs was found to prevent the establishment of regular patterns and was a risk factor for greater relationship conflict (Perry-Jenkins, Goldberg, Pierce, & Sayer 2007). Unsurprisingly,

being in a lower socioeconomic bracket has been found to be a large source of stress for new parents, since in addition to building competence in managing a new infant, there is worry about financial stability (Khajehei, 2016b).

Parental fatigue is also a common stressor in early parenthood, and is associated with lower parental competence, greater parenting stress, and more irritability in parent-child interactions (Cooklin, Giallo, & Rose, 2011). As would be expected, poor sleep quality is generally associated with declines in relationship satisfaction (Cooklin et al., 2011). Finally, Gjerdingen and Center (2003) found that fathers' number of sick days increased over the transition to parenthood, and when experiencing fatigue, also reported decreased levels of general good health. When taken in conjunction with the maternal experience of recovery from childbirth, it is clear that both parents experience significant physical hardships over the transition to parenthood.

Stressful life events. In Kingston and colleague's 2010 study involving 6,421 women across Canada, 17% of women reported having experienced three or more stressful life events in the year before the birth of their child. Stressful life events (e.g., financial issues, immigration, family illness, etc.) have been shown to have a particularly significant negative effect on new mothers – often manifested in depressive symptoms (Kingston, Heaman, Fell, Dzakpasu, & Chalmers, 2012; Li et al., 2013; Tsao, Creedy, & Gamble, 2016; Ward, Kanu, & Robb, 2017). Moreover, when stressful life events accumulate, the effects compound, leading to further worsening of depressive symptoms (Ward, Kanu, & Robb, 2017). As this is a relatively new direction in the literature, less is known about fathers' experiences with stressful life events over the transition to parenthood.

Parenting stress. Another area to consider as a stressor in the transition to parenthood is the bidirectional relationship between the parent and the child. Parenting stress, defined as "distress resulting from feelings that parenting is burdensome," has been correlated with poorer child outcomes (Ispa, Sable, Porter, & Csizmadia, 2016).

According to Bowen's (1966) influential family systems theory, a change in one part of the system is followed by a compensation in other parts of the system. With childbirth, compensation and change must be made to other areas of the family system – i.e., the marital relationship. Researchers have found a significant relation between parenting stress and the quality of the intimate partner relationship (Durstchi, Soloski, & Kimmes, 2016). For instance, more supportive co-parenting is associated with lower parenting stress and greater parenting satisfaction for both men and women (Schoppe-Sullivan, Settle, Lee, & Dush (2016). Parenting stress has been theorized to spill over into the intimate partner relationship, resulting in lowered intimate relationship quality (Durstchi et al., 2016).

The Role of Stress in Relationship Attributions during the Transition to Parenthood

Since stress levels increase over the transition to parenthood, this may explain why relationship functioning suffers for some couples. Are couples becoming more distressed due to unmet expectations of one another? Can increased levels of stress induce changes in the ways that partners think about one another, leading to worsened relationship functioning?

Bodenmann (2005) proposed a theory of stress within intimate relationships. Dyadic coping includes processes in which both partners' respond to the other's stress signals as well as how couples engage with one another when stressed, such as how tasks are delegated in stressful situations. Even if a partner is skilled in these behaviours, actions may be perceived by the stressed partner as being intrusive and counterproductive. Unsurprisingly, if a supporting partner

is unskilled in these comforting behaviours, this may exacerbate stress and increase frustration and anger in the stressed partner (Bodenmann, 2005).

In the vulnerability-stress-adaptation (VSA) model, changes in the intimate relationship are due to three interrelated factors: enduring vulnerabilities of the individual and the couple, a stressful event, and levels of adaptive processes (Karney & Bradbury, 1995). For all couples transitioning to parenthood, the arrival of a new baby is a common stressor. However, a couple's vulnerabilities, as well as how they view and adapt to the stressor can change the trajectory of subsequent perceived stress and marital satisfaction. Long-term vulnerabilities may include complex personality traits (such as neuroticism or hostility) or abuse in the family of origin (Karney & Bradbury, 1995). Other sources of vulnerability are poor problem solving skills and poor adaptive processes when in stressful circumstances (Karney & Bradbury, 1995).

Bodenmann (2005) demonstrated that the quality of relationship communication significantly decreased after experimentally-induced couple stress. The induced stress resulted in less positive interactions such as active listening, interest and empathy, and more negative behaviours such as criticism and contempt (Bodenmann, 2005). Likewise, in another longitudinal study of newlywed couples, both men and women reported higher levels of psychological or verbal aggression when they were stressed (Frye & Karney, 2006). Moreover, Bodenmann and colleagues (2010) tested whether general life stress, financial strains, relationship stress, and stress in other relationships led to greater verbal aggression in the intimate partner relationship. They found that environmental and circumstantial factors affected spouses' experiences of anger and expression of strong negative emotionality (Bodenmann et al., 2010).

Finally, Nonterah and colleagues (2016) conducted a unique study which focused on changes in relational humility over the transition to parenthood. The study is of particular interest

as they were able to demonstrate that perceived stress could influence how partners viewed one another. Nonterah and colleagues (2016) predicted that as perceived stress increased, "relational humility" would decrease. "Relational humility" was defined as how partners perceived each other's degree of humbleness. This was of interest to the researchers as humility is positively correlated with increased commitment and relationship quality. Moreover, stress may cause the focus to shift from prioritizing the relationship, to coping with the stress instead (Perren et al., 2005). Nonterah and colleagues (2016) found that as perceived stress levels increased, partners viewed their partners as less humble. Since perceived stress can affect perceptions of the partner's character, it may be that stress can also affect other aspects of cognition, like hostile attributions, over the transition to parenthood.

Stress and Hostile Attributions. A hostile attribution is the result of a thought process, and is defined as a thought, meaning, or explanation of a particular behaviour that views another person as intending to cause harm or distress (Foran & Slep, 2007). It is a cognition or a thought, whereas hostility or rather *trait* hostility is viewed as a part of personality and as an underlying reason or cause behind the tendency to engage in thought processes such as the hostile attribution bias (Norlander & Eckhardt, 2005). At current, the literature has not addressed the broad indirect effect of general life stress on hostile attributions within couples, but rather examines other specific pathways such as the effect of emotional distress on hostile attributions (Bodenmann, 2005; Gottman, 1993; Kawabata, Crick, & Hamaguchi, 2013), the relation between hostile attributions and intimate partner violence (Downey & Feldman, 1996; Eckhardt, Barbour, Davison, 1998; Eckhardt & Dye, 2000; Fincham, Bradbury, Arias, Byrne, Karney, 1997; Holtzworth-Munroe, 1991; Holtzworth-Munroe, Hutchinson, 1993; Lawson & Malnar, 2011; Norlander & Eckhardt, 2005) or the relation between a stressful developmental environment and

subsequent hostile psychopathologies (Crick & Dodge, 1994; Dodge, Price, Bachorowski, & Newman, 1990; Mathieson et al., 2011; Oriobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). However, the discussion on how stress may impact the development of hostile attributions is critical to understanding how hostile attributions may unfold in many couples.

Though an extreme example, general strain theory proposes that negative relationships with others leads to a general negative affect state (especially anger) which can predispose an individual to the occurrence of criminal behaviour (Agnew, 1992). "Strain" occurs when others do not treat the individual in ways he or she wants to be treated (Agnew, 1992). In other words, it is the disconnect between expectations and actuality that can "strain" an individual and is emotionally distressing. These unmet expectations may occur through familial or intimate partner relationships (breakups, moving to a new neighbourhood, death of a parent, etc.), not receiving a promotion the individual expected to receive, financial strain, social class, and more (Agnew, 1992). This theory may be useful for understanding how people may be affected by life circumstances and stressors, and begin engaging in less than favourable thought patterns and behaviours.

In intimate partner relationships, individuals whose expectations of their partner were not met were more likely to react with anger, resulting in increased relationship conflict (Foran & Slep, 2007). Perhaps unmet expectations in their partner's performance in tasks post-partum leads to more conflict and less relationship satisfaction, alluding to more cognitive-type explanations for these negative interactions.

As may be expected then, researchers have noted for decades now that violated expectations in the transition to parenthood results in less positive and more negative change in

the marital relationship (Belsky, 1985). Couples whose expectations are faulty or illogical may experience greater difficulties in the relationship (Lawrence, Nylan, & Cobb, 2007). Indeed, for many couples, those who begin with the most positive expectations over the transition to parenthood are those who experience the most marital satisfaction decline (Lawrence, Nylan, & Cobb, 2008).

Foran and Slep (2007) discussed how individuals within a relationship may come to have standards or expectations for their partner that they ordinarily would not have for others. For some, unrealistic relationship expectations may negatively affect relationships by blaming the partner when these standards are not met. A hostile attribution within a partner relationship is understood as attributing negative intent to the partner, and seeing the other as the cause for the conflict (Eckhardt, Babour, & Davison, 1998). For example, believing that a partner was intending to hurt the other's feelings, trying to make the other angry, trying to get something out of the partner, putting the other down, or picking a fight (Holtzworth-Monroe & Hutchinson, 1993). It has been established in the literature that men who are aggressive toward their partners tend to attribute more hostile intent to their wives' actions than men who are not aggressive toward their partners (Eckhardt, Barbour & Davison, 1998; Eckhardt & Dye, 2000; Holtzworth-Munroe, 1991; Holtzworth-Munroe & Stuart, 1994).

In a community sample, Gottman (1993) found that distressed couples engaged in more attributional thinking than non-distressed couples, and that the attributional thoughts mainly concerned events that were negative and impactful in their relationship. Distressed couples maximized the impact of negativity by ruminating on and maintaining hostile attributions, and simultaneously minimized positive aspects of their partner's behaviour (Gottman, 1993). This may contribute to our understanding of how couples who are in distress continue in a self-

perpetuating cycle of attributing hostile intent to the other partner's behaviour. Since unrealistic expectations and beliefs about the partner are correlated with maladaptive behaviours, including increased levels of psychological intimate partner violence (IPV; Foran & Slep, 2007) and physical IPV (Holtzworth-Monroe & Hutchinson, 1993), increases in hostile attributions are clearly problematic.

Although the relationship between stress and hostile attributions has not yet been directly tested in the literature, these studies have shown that *distressed* couples often engage in more attributional thinking. Indeed, as Bodenmann (2005) alluded to in his study of induced stress and the effect of environmental stressors (Bodenmann et al., 2010), perhaps stress may be a *cause* for increased hostile attributional thinking. An important question that remains to be answered is the understanding of the mechanisms by which stress leads to increases in hostile attributions.

Trait Hostility and Hostile Attributions

Are all couples equally likely to experience hostile attributions in the context of stress, or are some individuals at greater risk? One factor that has been shown to increase risk of hostile attributions is trait hostility. According to Epps & Kendall (1995), trait hostility is essentially a stable cognitive schema which results in a distorted system of appraisals and expectancies. This skewed outlook allows for biases in evaluating *perceived* negative experiences and results in maladaptive judgments and subsequent behaviour. Aggression is often a term brought up in conjunction with trait hostility as it is frequently regarded as a behavioural reaction to perceived slights and offenses through this distorted and hostile lens (Epps & Kendall, 1995). Destruction of objects or even injury to others is a possible result of high trait hostility (Epps & Kendall, 1995).

Trait hostility is a personality dimension that has been identified as a risk factor for hostile attributional biases (Epps & Kendall, 1995). As such, it is clear that personality factors and communication processes play a large role in the development of hostile attributions about partners' behaviours, and how perhaps devastatingly, personality factors may contribute to the occurrence of intimate partner violence. Researchers have found that when those who are high in trait hostility perceive provoking stress, their bodies experience physiological changes such as increased blood pressure (Suls & Wan, 1991). Further, it is possible that trait hostility might be particularly likely to lead to hostile attributional thinking in the context of high levels of stress. This is an area of research that merits further investigation. Researchers should consider the complex picture of cognitive factors (e.g., hostile attributions), the personality factors that give rise to distorted cognitions and communication styles, and the contextual stress of a couple.

Perinatal Depression and Hostile Attributions

Another explanation for the link between stress and hostile attributions is the well-established phenomenon of perinatal depression. Many new parents experience high levels of parenting stress as they transition to parenthood, which can lead to depressive symptoms (Anding et al., 2016; Vismara et al., 2016; Yim et al., 2015). Maternal pre and post-partum depression may significantly impact the intimate partner relationship with the arrival of a new baby (Forman et al., 2007). Historically, the clinical literature on the transition to parenthood was born out of the observation of women experiencing mental health issues—specifically postpartum depression (Fedele, Golding, Grossman, & Pollack, 1988). However, more recent studies have tried to bridge the current gap in knowledge between depressive symptomology in women and men. First, the literature revolving around mothers and mental health issues will be

discussed, followed by the current state of the literature regarding fathers and mental health over the transition to parenthood.

In community samples, maternal prenatal and postpartum depression have been established as common phenomena (Forman et al., 2007; Moel et al., 2009; Skouteris, Wetheim, Rallis, Milgrom, & Paxton, 2008), with a 7.1% prevalence rate of postpartum depression (within the first three months after birth) in an American population (Gavin et al., 2005). Moreover, the quality of the intimate relationship is significantly associated with depressive symptoms for both men and women (Figueiredo et al., 2008). Maternal depression has been shown to have a significant negative effect on partners and children, such as disrupted interpersonal and sexual functioning, and has been linked to worse child outcomes (Forman et al., 2007; Moel et al., 2009).

Historically, there was an absence in research addressing paternal depression and its consequent effect on the intimate partner relationship. More recently, however, studies have begun to include both genders in their examination of depressive symptoms over the transition to parenthood (Figueiredo et al., 2008; Perren et al., 2005; Trillingsgaard, Baucom, & Heyman, 2014; Vismara et al., 2016). Results are inconsistent, with some reports citing no differences between mothers' and fathers' depressive symptoms over the transition to parenthood (Figueiredo et al., 2008; Perren et al., 2005; Trillingsgaard, Baucom, & Heyman, 2014), while others report mothers' depressive symptoms as significantly higher than fathers' depressive symptoms (Vismara et al., 2016). Regardless of prevalence rates, however, it is likely that the experience of perinatal depression will alter relationship cognitions during the transition to parenthood for both men and women.

Aaron Beck, who is regarded as one of the pioneers in the study of depression and anxiety, believed that depression induces a state of more negatively biased thinking (Beck, 1967). Researchers have found across a variety of contexts that depressive symptoms are predictive of attributing hostile intent to others' behaviour (Becker & Lesiak, 1977; Kawabata, Crick, & Hamaguchi, 2013; Fava, Nolan, Kradin, & Rosenbaum., 1995). In particular, in intimate partner relations, researchers have found that partners who are depressed are more likely to underestimate their partner's commitment, and overestimate their partner's negative behaviour (Overall & Hammond, 2013). Since parents are particularly prone to developing depressive symptoms during the transition to parenthood (Forman et al., 2007; Moel et al., 2009; Skouteris, Wetheim, Rallis, Milgrom, & Paxton, 2008), increases in depressive symptoms may predict increases in hostile attributions during this time. Indeed, depressive symptoms may be a key factor explaining the link between stress and hostile attributions during the transition to parenthood.

The Current Study

The current study examined predictors of hostile attributions during the transition to parenthood, with a focus on stress levels, trait hostility, and depressive symptoms as risk factors for increases in hostile attributions during early parenthood. I examined these factors longitudinally using a community sample of couples followed from the third trimester of pregnancy with their first child to two years postpartum. I examined both time invariant and time varying predictors of hostile attributions using actor-partner interdependence models (Cook & Kenny, 2005) and hierarchical linear modeling (Raudenbush, Brennan, & Barnett, 1995).

Research Question 1: Does Increased Stress Lead to Increases in Hostile Attributions over the Transition to Parenthood?

The literature has shown that the transition to parenthood is a stressful developmental period and that levels of conflict tend to increase after the arrival of the child (Belsky, Spanier & Rovine, 1983). A possible mechanism for this increase in conflict may be due to an increase in perceived stress, leading to an increase in hostile attributions made toward the partner. This may be especially pertinent as stress can induce changes in how partners view each other (Nonterah et al., 2016). In addition to general life stress, parenting stress is also linked to poorer intimate relationship satisfaction (Epifanio et al., 2015). Does this increase in stress lead to changes in levels of hostile attributions made against a partner? I hypothesized that increased levels of general perceived stress and parenting stress, would each uniquely lead to increased levels of hostile attributions over the transition to parenthood.

Research Question 2: Does Trait Hostility Moderate the Link Between Stress and Hostile Attributions?

As discussed previously, certain personality traits may predispose individuals to attribute more hostile intent to their partner's actions, resulting in maladaptive responses (Collins, Ford, Guichard, & Allard, 2006; Lawson & Brossait, 2013; Lawson & Malnar, 2011; Lemay & Spongberg, 2014; Rempel, Ross, & Holmes, 2001). High levels of trait hostility are often linked with maladaptive judgment and aggressive behaviour (Epps & Kendall, 1995). For those who are high in trait hostility, both perceived and parenting stress may work to "activate" trait hostility, leading to more hostile attributions being made toward a partner than would normally be made in non-stressful circumstances.

I hypothesized that increased levels of stress (both parenting and life stress) would interact with higher levels of trait hostility to predict increased levels of hostile attributions in both genders over the transition to parenthood.

Research Question 3: Do Depressive Symptoms Mediate the Link Between Stress and Hostile Attributions?

Depression over the transition to parenthood is often predicted by high levels of stress (Kingston, Heaman, Fell, Dzakpasu, & Chalmers, 2012; Li et al., 2013; Tsao, Creedy, & Gamble, 2016; Ward, Kanu, & Robb, 2017). Furthermore, depression can induce changes in thought processes, potentially causing a vulnerability to increased levels of hostile attributions (Beck, 1967; Becker & Lesiak, 1977; Kawabata, Crick, & Hamaguchi, 2013; Fava, Nolan, Kradin, & Rosenbaum., 1995; Overall & Hammond, 2013). Depressed individuals tend to experience increased levels of irritability, hostility, and sensitivity – particularly to rejection (Becker & Lesiak, 1977), which may make them more susceptible to hostile attributions in close relationships. As such, it seems possible that as stress levels increase, depressive symptoms increase, leading to increases in hostile attributions made toward a partner.

Previous research has found that women experience higher levels of depression as they experience pregnancy and the postpartum period (Forman et al., 2007; Moel et al., 2009). Further, stress has been linked to significant increases in mothers' depressive symptoms over the transition to parenthood (Perry-Jenkins et al., 2007). However, recent advances in research have suggested that there are fewer gender differences in depressive symptomology over the transition to parenthood than previously thought (Figueiredo et al., 2008; Perren et al., 2005; Trillingsgaard, Baucom, & Heyman, 2014).

Could potential changes in hostile attributions toward a partner be accounted for by depressive symptoms? Guided by the more recent literature, I hypothesized that regardless of gender, the relationship between stress and hostile attributions would be mediated by depressive symptoms over the transition to parenthood.

Method

Participants

Data were collected from a community sample of 98 heterosexual couples at three different points in time: the third trimester of pregnancy, the first year postpartum, and the second year postpartum. 98 couples participated in the study at the time of pregnancy, 77 men and 85 women participated at the time of first year postpartum, 72 men and 74 women participated at the time of second year postpartum. Two couples who separated at the second time point were excluded from the study, as well as a couple who experienced a stillborn birth. Men who were excluded or dropped out of the study were more likely to be of a low SES background. The study was approved by the Human Research Ethics Board of a local university, and informed consent was obtained before participation in each wave of data collection.

Couples were recruited from a mid-sized city in British Columbia, Canada. Advertisements and brochures were placed at strategic sites across the city (offices of midwives, obstetricians, and doulas, local universities and college campuses, maternity stores, pregnancy-related websites, and local baby fairs). As well, presentations were conducted across the city by the researchers at various prenatal classes. The eligibility requirements to participate in the study included: to currently be pregnant with the couple's first child, to be able to speak and read English, to be living together, and to be over the age of 17.

The average ages of participants at the first time point were 32.03 (SD = 5.51) for men, and 29.98 (SD = 5.49) for women. Moreover, the average years of education for men were 14.77 (SD = 2.38), while the average years of education for women were 15.28 (SD = 2.31). About 64% of men were employed full-time whereas 59% of women were employed full-time, with an average combined annual income of CAD$86,739. The majority of the couples were legally

married (69.4%) and the couples reported an average of 4.55 (*SD* = 3.15) years living together. Of the men, approximately 6% identified as Canadian Aboriginal, and 7% identified with another ethnic minority group. For the women, 4% identified as Canadian Aboriginal, and 10% identified with another ethnic minority group (Asian-Canadian, Indo-Canadian, African-Canadian, or Latin American).

Procedures

Data for this study were a part of a larger study (Partners to Parents Study) which was directed by Dr. Erica Woodin. This data set provided an excellent opportunity to conduct research on couples who are transitioning to parenthood as it was longitudinal and addressed all of the factors that were investigated.

For the first wave of data collection (during the third trimester of pregnancy), interested participants contacted the laboratory, were asked to complete a brief screening over the phone, and then scheduled an appointment to come into the lab and participate in the research. This research session comprised of computer questionnaires (completed in a separate room than the partner), an interview with the couple and a researcher, and activities where interactions between the partners could be observed. These questionnaires asked about personal mental health, relationship functioning, partner aggression, and personality factors. Participants were given a community resource list, a baby t-shirt, and a CAD$100 honorarium for their time (per couple).

For each subsequent wave of data collection (1st year postpartum, 2nd year postpartum), participants were contacted by phone or email and asked if they were interested in continued participation in the study. If so, participants were given their own individual code and password to access online questionnaires and were encouraged to complete these assessments separately from their partners. Many of the questionnaires were the same validated questionnaires as at

previous assessments, with the addition of various questionnaires depending on the developmental stage of the child. Once the participant completed the survey, each participant was mailed an honorarium of CAD$25 ($50 per couple), or CAD$50 (for the later wave of data collection; $100 per couple).

Measures

General life stress. The Perceived Life Stress Scale (Appendix A) was developed by Cohen, Kamarck, & Mermelstein in 1983. It is a widely-used tool to measure how much perceived stress an individual is currently experiencing. These perceived levels of stress have been linked to demographic characteristics such as gender, education, and income, and have even been shown to predict health behaviours such as failure to quit smoking (Cohen & Janicki-Deverts, 2012). The Perceived Stress Scale is a 10-item questionnaire that asks participants to reflect on their feelings and thoughts in the last month. Questions such as "In the last month, how often did you feel like you were unable to control the important things in your life?" are posed to the participant, and at the end of each question, the participants are asked to indicate how often they have felt or thought this way ("0 Never, 1= Almost Never, 2 = Sometimes, 3 = Fairly Often, 4 = Very Often"). Data were collected from the first, second, and third time points. Cronbach's alpha indicated good to excellent reliability across all time points (Time 1: $\alpha = .89$ for women and $\alpha = .84$ for men; Time 2: $\alpha = .90$ for women and $\alpha = .86$ for men; Time 3: $\alpha = .90$ for women and $\alpha = .89$ for men).

Parenting stress. The Parenting Stress Index – Short Form (Abidin, 1995) is a direct derivative of the Parenting Stress Index full-length test. Haskett, Ahern, Ward & Allaire (2010) found two factors that emerged in their sample with 185 mothers and fathers: 1) parental distress, and 2) dysfunctional parent-child interactions. These factors were found to be internally

consistent and correlated with measures of parent psychopathology, perceptions of child adjustment, and importantly, observed parent child behaviour (Haskett et al., 2010). Therefore, the composite score of the two factors were used for the purposes of this study. There are 36 items on the index, such as "Having a child has caused problems with my partner," and "My child does things that bother me a great deal." There are five response choices, "strongly agree", "agree", "neutral", "disagree", and "strongly disagree" that parents can choose for each item. The complete short form had excellent reliability estimates for this sample as Cronbach's alpha indicated excellent reliability across all time points (Time 2: $\alpha = .95$ for women and $\alpha = .93$ for men; Time 3: $\alpha = .95$ for women and $\alpha = .94$ for men).

Trait Hostility. The Buss-Perry Aggression Questionnaire (Buss & Perry, 1992; Appendix B) is a 29-item questionnaire that measures aggression in various forms and asks participants to rate items on a five-point scale, with "1 = extremely uncharacteristic of me", and "5 = extremely characteristic of me". For this study, the hostility subscale comprised of 8 items was used. "A higher score on the hostility subscale indicates greater feelings of ill will or injustice (Buss & Perry, 1992)." The construct of hostility is considered to be relatively stable as a personality trait, and is characterized by cynicism and mistrust (Miller, Smith, Turner, Guijarro, & Hallet, 1996). Cronbach's alpha ($\alpha = .78$ for men, $\alpha = .80$ for women) at baseline indicated adequate internal reliability of the hostility subscale. Data was collected from only the first wave as trait hostility is assumed to be a stable personality construct.

Depressive Symptoms. The Centre for Epidemiological Studies Depression Scale (Appendix C) is a short self-report questionnaire designed to measure depressive symptomology in the general population rather than in a clinical population (Radloff, 1977). The scale includes 20 items, each targeting a symptom of depression, such as "I felt that I could not shake off the

blues even with help from my family or friends," "People were unfriendly," or "I talked less than usual." It asks the participant to recall if they had felt or behaved this way in the past week ("rarely or none of the time (less than 1 day), some or a little of the time (1-2 days), occasionally or a moderate amount of time (3-4 days), most or all the time (5-7 days)"). Data were collected from all three time points of the study. Cronbach's alpha indicated adequate to good reliability across time points (Time 1: $\alpha = .90$ for women and $\alpha = .82$ for men; Time 2: $\alpha = .90$ for women and $\alpha = .87$ for men; Time 3: $\alpha = .92$ for women and $\alpha = .89$ for men).

Hostile Attributions. The Partner Attribution Questionnaire (Appendix D) was developed by Slep (1998) based on the notion that partners who have unrealistic expectations or beliefs about their partner may be more likely to engage in partner violence. It is a 30-item questionnaire with two 10-item subscales and 10 distractor items. One subscale measures self-locused dysfunctional attributions, and the other measures partner-locused dysfunctional attributions. For the purposes of this study, the partner-locused subscale was employed. Items were attributions that the participant could endorse about the partner's ambiguous or mildly negative behaviours that are interpreted as having a focus on the partner, controllable, and negatively intended by the partner to impact the individual. For example, "My partner likes to see how far he or she can push me," or "My partner just won't listen to me." The participant was asked to reflect on the past two months and to rate how much they would agree that this was the cause of their partner's behaviour, on a scale of 1 to 6 ("1 = always true, 6 = never true"). The partner responsibility subscale had excellent reliability for the second and third wave of data collection, however, showed poor reliability for the first wave. (Time 1: $\alpha = .61$ for women and $\alpha = .61$ for men; Time 2: $\alpha = .90$ for women and $\alpha = .92$ for men; Time 3: $\alpha = .95$ for women and $\alpha = .93$ for men). A possible explanation for the poor reliability in the first wave may be a lack of

variability in the responses of the participants as compared to the latter waves. Indeed many of the responses in the first wave indicated higher levels of hostile attributions than in the subsequent waves.

Data Analysis Plan

The data analysis plan employed Hierarchical Linear Modelling (HLM) to examine between-person and within-person change over time (Bryk & Raudenbush, 1987; Raudenbush, Brennan, & Barnett, 1995). HLM is the analysis of choice, as it is bypasses pitfalls of longitudinal data by using maximum likelihood to estimate incomplete data, by plotting slopes over time rather than static points in time, and by estimating rates of change at both the individual and group level (Singer & Willet, 2003). Moreover, HLM is able to account for the "nestedness" of data, meaning that it can account for the similarity of responses within each couple (Singer & Willet, 2003). For this study, since individuals were "nested" within dyads, I used the Actor-Partner Independence Model proposed by Cook and Kenny (2005). Since the couples in this study were distinguishable by gender, the interaction approach, in which the genders were separated for each of the level 1 predictors, was used when possible, (Cook & Kenny, 2005). The two-slope method was used, incorporating dummy variables (when male is 1, female is 0; when female is 1, male is 0) and resulting in a slope for each gender (Cook & Kenny, 2005).

Results

Preliminary Analyses

Prior to conducting analyses, measures were taken to ensure the suitability of the data such as checking for outliers, missing data, and multicollinearity (please see Tables 5 to 10). Next, results from the Parenting Stress Index and the Perceived Life Stress Scale were checked to ensure that the measures did not correlate to a degree greater than $r = 0.80$ across all of the time points. Indeed, the results indicated that there was no multicollinearity present between parenting stress and life stress at either Time 2 or Time 3 so both types of stress were inputted into models separately rather than combining them to create a new latent variable. Further, outliers (of more than three standard deviations from the mean) within variables were Winsorized in order to minimize skewedness. Once outliers were identified, they were "pulled in" by assigning them a value one larger than the last value still within three standard deviations of the mean. This was done for two instances of the life stress variable, twice for the parenting stress variable, once for the trait hostility variable, five times for the depressive symptoms variable, and three times for the hostile attributions variable. Fewer than 5% of data were missing at the item level, and thus mean replacement was used to create total scores (Schafer, 1999). There were no instances in which variables were completely missing for participants for Level 2 data, and missing longitudinal follow-up data were estimated during the analysis process.

Demographic variables such as age, years together, education, income, and membership in a minority group (please refer to Table 1), were checked for significant bivariate correlations with the variables to be investigated (stress, trait hostility, depressive symptoms, hostile

attributions). Since none were significantly correlated with hostile attributions, demographic variables were not included in the models.

Descriptive Statistics

Please refer to Tables 2 to 4 for descriptive statistics across all three time points and Tables 5 to 10 for correlations among variables. There were significant gender differences in depressive symptoms at Time 1 (women higher; $F = 10.71$, $df = 1$, $p < 0.001$), in hostile attributions at Time 2 (men higher; $F = 10.60$, $df = 1$, $p < 0.001$), and in hostile attributions at Time 3 (men higher; $F = 4.97$, $df = 1$, $p < 0.05$). Life stress correlated highly with depressive symptoms for both men and women, ranging from $r = .62$ to $r = .82$. Since life stress and depressive symptoms were predictor variables, there was no cause for concern of multicollinearity, because once inputted into the model they acted as covariates, accounting for the variability of each other.

Unconditional model: Hostile attributions over linear and quadratic time

In examining the unconditional HLM model with hostile attributions as the outcome variable, both linear and quadratic change were statistically significant for both men and women. Therefore, quadratic change over time was kept in all equations that included hostile attributions as an outcome (please see Table 11).

Hostile attributions changed significantly over both linear and quadratic time (please refer to Table 11 and Figure 1). Overall, for both men and women, hostile attributions declined over time, with women having a steeper decline. Hypothesis testing indicated that the gender difference in the linear decline in hostile attributions over time was statistically significant ($\chi^2 = 9.34$, $df = 1$, $p < .01$). Changes in quadratic time were positive, indicating that for both men and women, hostile attributions started higher at the first time point, declined after the birth of the

baby, but then increased again by the second year postpartum. Again, changes for women were steeper, and this difference of changes in quadratic time was also statistically significant between genders ($\chi^2 = 4.75$, $df = 1$, $p < .05$). There were also significant individual differences of both men ($\chi^2 = 90.94$, $df = 47$, $p < .001$) and women ($\chi^2 = 64.51$, $df = 47$, $p < .05$) within their changes in hostile attributions over quadratic time.

Model 1: Changes in stress predicting changes in hostile attributions over time

In Model 1, changes in stress (perceived life stress and parenting stress) were modeled to predict changes in hostile attributions over time. Data for life stress and hostile attributions were taken from all three time points (please refer to Model 1a). There were no significant changes in stress over the transition to parenthood (please refer to Figure 2). Since parenting stress was collected after the arrival of the baby, there were only two time points– meaning that changes in linear time were analyzed, but not changes in quadratic time (please see Model 1b). According to Raudenbush and colleagues' (1995) procedures of modelling couples' dyadic data, a 2-level model was employed. Each individual's change in hostile attributions over time was plotted as a slope as predicted by changes in stress levels over time (modelled as a time varying predictor at Level 1). Slopes were modelled separately for men and women within each couple.

Model 1a: Life stress predicting hostile attributions

Level 1:

$$\text{Hostile Attributions}_{ij} = \beta_1(\text{male partner}) + \beta_2(\text{female partner}) + \beta_3(\text{male time}) + \beta_4(\text{female time}) + \beta_5(\text{male quadratic time}) + \beta_6(\text{female quadratic time}) + \beta_7(\text{male life stress}) + \beta_8(\text{female life stress}) + \varepsilon_{ti}$$

Level 2:

$$\beta_1 = \mu_{10} + \varepsilon_{1i}$$

$\beta_2 = \mu_{20} + \varepsilon_{2i}$

$\beta_3 = \mu_{30}$

$\beta_4 = \mu_{40}$

$\beta_5 = \mu_{50} + \varepsilon_{5i}$

$\beta_6 = \mu_{60} + \varepsilon_{6i}$

$\beta_7 = \mu_{70} + \varepsilon_{7i}$

$\beta_8 = \mu_{80} + \varepsilon_{8i}$

I hypothesized that perceived life stress would be a predictor of hostile attributions over time. Indeed, increases in life stress significantly predicted increases in hostile attributions for both men and women (please see Table 12). Hypothesis testing showed that men and women did not differ significantly in the link between life stress and hostile attributions. However, there were significant individual differences between men in how their life stress predicted hostile attributions ($\chi^2 = 64.10$, $df = 47$, $p < .05$). These individual differences show that although the general trend was for life stress to predict hostile attributions, there were some men whose data did not reflect this relation, perhaps indicating that there are other factors at play for men. Overall, the results show that life stress is a significant predictor of hostile attributions over the transition to parenthood for both men and women and that there are no gender differences in this regard.

Model 1b: Parenting stress predicting hostile attributions

Level 1:

$$\text{Hostile Attributions}_{ij} = \beta_1(\text{male partner}) + \beta_2(\text{female partner}) + \beta_3(\text{male linear time}) + \beta_4(\text{female linear time}) + \beta_5(\text{male parenting stress}) + \beta_6(\text{female parenting stress}) + \varepsilon_{ti}$$

Level 2:

$\beta_1 = \mu_{10} + \varepsilon_1$

$\beta_2 = \mu_{20} + \varepsilon_2$

$\beta_3 = \mu_{30} + \varepsilon_3$

$\beta_4 = \mu_{40} + \varepsilon_4$

$\beta_5 = \mu_{50}$

$\beta_6 = \mu_{60}$

I hypothesized that changes in parenting stress would also predict changes in hostile attributions over time. Indeed, parenting stress did significantly predict hostile attributions for both men and women over time (please see Table 13). As parenting stress increased, hostile attributions increased. Hypothesis testing showed no significant difference between men and women in and the link between parenting stress and hostile attributions over time.

Model 2: The interaction of trait hostility and stress as a predictor of hostile attributions

In Model 2, trait hostility was incorporated at level 2 of the model as a time-invariant predictor, as it was a stable trait that was measured prenatally (please see Table 14). Life stress and parenting stress were analyzed through separate models. Again, data for parenting stress were taken from time points 2 and 3, whereas data for life stress and hostile attributions were taken from all three time points. This model simultaneously tested effects for both genders. Hypothesis testing of gender differences in the impact of trait hostility levels on hostile attributions, as well as the relationship between stress and hostile attributions, were also conducted.

Model 2a: Life stress X trait hostility as a predictor of hostile attributions

Level 1:

$$\text{Hostile Attributions}_{ij} = \beta_1(\text{male partner}) + \beta_2(\text{female partner}) + \beta_3(\text{male time}) + \beta_4(\text{female time}) + \beta_5(\text{male quadratic time}) + \beta_6(\text{female quadratic time}) + \beta_7(\text{male life stress}) + \beta_8(\text{female life stress}) + \varepsilon_{ti}$$

Level 2:

$$\beta_1 = \mu_{10} + \mu_{11}(\text{trait hostility}) + \varepsilon_1$$

$$\beta_2 = \mu_{20} + \mu_{21}(\text{trait hostility}) + \varepsilon_2$$

$$\beta_3 = \mu_{30} + \mu_{31}(\text{trait hostility}) + \varepsilon_3$$

$$\beta_4 = \mu_{40} + \mu_{41}(\text{trait hostility}) + \varepsilon_4$$

$$\beta_5 = \mu_{50} + \mu_{51}(\text{trait hostility})$$

$$\beta_6 = \mu_{60} + \mu_{61}(\text{trait hostility})$$

$$\beta_7 = \mu_{70} + \mu_{71}(\text{trait hostility})$$

$$\beta_8 = \mu_{80} + \mu_{81}(\text{trait hostility})$$

With the addition of trait hostility at level 2 of the model, higher trait hostility significantly predicted a higher intercept of hostile attributions for men at Time 1, but not for women (please see Table 14). Moreover, trait hostility significantly predicted linear and quadratic changes in hostile attributions for men, whereas it did not significantly impact changes in hostile attribution for women in either linear or quadratic time. As such, for men, levels of trait hostility significantly impacted the rates of change in hostile attributions over time.

The interaction between life stress and trait hostility in predicting hostile attributions was not significant for women, but was significant for men. In particular, the interaction effect for men was negative, indicating that the combination of trait hostility and life stress is less than the sum of the individual effects. In examining the interaction visually, it appears that higher life stress only increased the risk for hostile attributions in men with low trait hostility, whereas men

with high trait hostility reported high levels of hostile attributions regardless of stress level (please see Fig. 1 for a graphical representation of the effect in men, and Fig. 2 for women). This aligns with the results of significant individual differences within men in their linear changes in hostile attributions over time (please see Tables 15 & 16 for descriptive stats for high and low trait hostile men). Moreover, hypothesis testing showed that there was a statistically significant difference in genders in trait hostility intercepts ($\chi^2 = 3.81$, $df = 1$, $p < .05$) as well as in how trait hostility interacted with life stress ($\chi^2 = 8.10$, $df = 1$, $p < .01$).

As a result of seeing the graphical representation of differences in the results of men's hostile attributions depending on levels of trait hostility, post hoc analyses were conducted to further assess these differences. Men's trait hostility levels predicting hostile attributions showed that men with low trait hostility (one standard deviation below the group mean) were only more likely to have increases in their hostile attributions in the context of increased life stress over the transition to parenthood (please see Table 17). On the other hand, men with high levels of trait hostility (one standard deviation above the group mean) were not found to have increased levels of hostile attributions as stress levels increased (please see Table 18). Rather, when viewing the graphical representation of their hostile attributions, it appears as though the hostile attribution levels remain high over time for men high in trait hostility. There were no significant results for men with average or high levels of trait hostility.

Model 2b: Parenting stress X trait hostility as a predictor of hostile attributions

Level 1:

$$\text{Hostile Attributions}_{ij} = \beta_1(\text{male partner}) + \beta_2(\text{female partner}) + \beta_3(\text{male linear time}) + \beta_4(\text{female linear time}) + \beta_5(\text{male parenting stress}) + \beta_6(\text{female parenting stress}) + \varepsilon_{ti}$$

Level 2:

$\beta_1 = \mu_{10} + \mu_{11}(\text{trait hostility}) + \varepsilon_1$

$\beta_2 = \mu_{20} + \mu_{21}(\text{trait hostility}) + \varepsilon_2$

$\beta_3 = \mu_{30} + \mu_{31}(\text{trait hostility}) + \varepsilon_3$

$\beta_4 = \mu_{40} + \mu_{41}(\text{trait hostility}) + \varepsilon_4$

$\beta_5 = \mu_{50} + \mu_{51}(\text{trait hostility})$

$\beta_6 = \mu_{60} + \mu_{61}(\text{trait hostility})$

In this model, trait hostility also significantly predicted the intercept of hostile attributions for men (please see Table 19). However, it did not significantly predict the intercept for women. Indeed, hypothesis testing showed a statistically significant difference between the genders in this regard ($\chi^2 = 13.44$, $df = 1$, $p < .001$). Additionally, in this model, trait hostility did not significantly predict changes in hostile attributions over linear time for either men or women.

As with life stress, the interaction between trait hostility and parenting stress produced a significant negative coefficient. Again, this implies that men who are higher in trait hostility were likely to have high levels of hostile attributions regardless of parenting stress, whereas men with low trait hostility were only likely to have higher hostile attributions in the context of higher parenting stress (please see Tables 21, 22, & 23 for descriptive stats for low, average, and high trait hostile men). Hypothesis testing showed that there was not a statistically significant difference between men and women, perhaps indicating that a similar effect was present in women, but did not meet the threshold to be statistically significant.

Post hoc analyses of men's trait hostility levels predicting hostile attributions, showed that men with low trait hostility (one standard deviation below the group mean) and average trait hostility (within one standard deviation from the mean) had greater hostile attributions toward a

partner as parenting stress increased (please see Table 23 & 24). As with life stress, for men who were high in trait hostility, hostile attributions were not related to parenting stress (see Table 25). Instead, these men had high levels of hostile attributions regardless of levels of parenting stress.

Model 3: Depressive symptoms as a mediator of the link between stress and hostile attributions

In order to test depressive symptoms as a mediator, two separate but related two-level models were used for each type of stress, according to the recommendations given by Zhao, Lynch & Chen (2010). As before, gender was built into the level 1 equation as it had been done for previous analyses.

The mediating role of depressive symptoms on the relationship between stress and hostile attributions was investigated. Depressive symptoms were included in the model as a Level 1 time-varying mediator. Data for parenting stress were taken from time points 2 and 3, while data for depressive symptoms, life stress, and hostile attributions were taken from all three time points.

Model 3a: Depressive symptoms as a mediator of the link between life stress and hostile attributions

Step 1: Life stress predicting hostile attributions

Level 1: $\text{Hostile Attributions}_{ij} = \beta_1(\text{male partner}) + \beta_2(\text{female partner}) + \beta_3(\text{male time}) + \beta_4(\text{female time}) + \beta_5(\text{male quadratic time}) + \beta_6(\text{female quadratic time}) + \beta_7(\text{male life stress}) + \beta_8(\text{female life stress}) + \varepsilon_{ti}$

Level 2: $\beta_1 = \mu_{10} + \varepsilon_1$

$\beta_2 = \mu_{20} + \varepsilon_2$

$\beta_3 = \mu_{30}$

$\beta_4 = \mu_{40}$

$\beta_5 = \mu_{50} + \varepsilon_5$

$\beta_6 = \mu_{60} + \varepsilon_6$

$\beta_7 = \mu_{70} + \varepsilon_7$

$\beta_8 = \mu_{80} + \varepsilon_8$

Please refer to Model 1a for results interpretation.

Step 2: Both life stress and depressive symptoms predicting hostile attributions

Level 1: Hostile Attributions$_{ij}$ = β_1(male partner) + β_2(female partner) + β_3(male time) + β_4(female time) + β_5(male quadratic time) + β_6(female quadratic time) + β_7(male life stress) + β_8(female life stress) + β_9(male depressive symptoms) + β_{10}(female depressive symptoms) + ε_{ti}

Level 2: $\beta_1 = \mu_{10} + \varepsilon_1$

$\beta_2 = \mu_{20} + \varepsilon_2$

$\beta_3 = \mu_{30} + \varepsilon_3$

$\beta_4 = \mu_{40} + \varepsilon_4$

$\beta_5 = \mu_{50} + \varepsilon_5$

$\beta_6 = \mu_{60} + \varepsilon_6$

$\beta_7 = \mu_{70} + \varepsilon_7$

$\beta_8 = \mu_{80} + \varepsilon_8$

$\beta_9 = \mu_{90} + \varepsilon_9$

$\beta_{10} = \mu_{10\,0} + \varepsilon_{10}$

In the second step, life stress still predicted hostile attributions for both men and women (please see Table 26). Hypothesis testing showed no significant difference between the genders. However, depressive symptoms significantly predicted hostile attributions for men, but not for women. This is not surprising, given the aforementioned high correlation between depressive symptoms and life stress for women. Again, hypothesis testing showed that men and women did not differ significantly from one another in the link between depression and hostile attributions over time.

Sobel's test for Model 3a

Lastly, the difference between path c and path ć was calculated according to the steps recommended by Krull & McKinnon (2001) in order to estimate how well the mediating role of depressive symptoms accounted for the relationship between stress and hostile attributions. A Sobel's test was conducted in order to examine the significance of the compound path and to see whether depressive symptoms were in fact a mediating variable. Results showed that depressive symptoms were not a significant mediator for men or women.

Model 3b: Depressive symptoms as a mediator of the link between parenting stress and hostile attributions

Step 1: Life stress predicting hostile attributions

Level 1: $\text{Hostile Attributions}_{ij} = \beta_1(\text{male partner}) + \beta_2(\text{female partner}) + \beta_3(\text{male time}) + \beta_4(\text{female time}) + \beta_5(\text{male quadratic time}) + \beta_6(\text{female quadratic time}) + \beta_7(\text{male parenting stress}) + \beta_8(\text{female parenting stress}) + \varepsilon_{ti}$

Level 2: $\beta_1 = \mu_{10} + \varepsilon_1$

$\beta_2 = \mu_{20} + \varepsilon_2$

$\beta_3 = \mu_{30}$

$\beta_4 = \mu_{40}$

$\beta_5 = \mu_{50} + \varepsilon_5$

$\beta_6 = \mu_{60} + \varepsilon_6$

$\beta_7 = \mu_{70} + \varepsilon_7$

$\beta_8 = \mu_{80} + \varepsilon_8$

Please refer to Model 1b for an interpretation of these results.

Step 2: Both parenting stress and depressive symptoms predicting hostile attributions

Level 1: $\text{Hostile Attributions}_{ij} = \beta_1(\text{male partner}) + \beta_2(\text{female partner}) + \beta_3(\text{male time}) + \beta_4(\text{female time}) + \beta_5(\text{male quadratic time}) + \beta_6(\text{female quadratic time}) + \beta_7(\text{male parenting stress}) + \beta_8(\text{female parenting stress}) + \beta_9(\text{male depressive symptoms}) + \beta_{10}(\text{female depressive symptoms}) + \varepsilon_{ti}$

Level 2: $\beta_1 = \mu_{10} + \varepsilon_1$

$\beta_2 = \mu_{20} + \varepsilon_2$

$\beta_3 = \mu_{30} + \varepsilon_3$

$\beta_4 = \mu_{40} + \varepsilon_4$

$\beta_5 = \mu_{50} + \varepsilon_5$

$\beta_6 = \mu_{60} + \varepsilon_6$

$\beta_7 = \mu_{70} + \varepsilon_7$

$\beta_8 = \mu_{80} + \varepsilon_8$

$\beta_9 = \mu_{90} + \varepsilon_9$

$$\beta_{10} = \mu_{10\,0} + \varepsilon_{10}$$

Parenting stress significantly predicted hostile attributions across time for both men and women (please see Table 27). Hypothesis testing showed no significant difference between men and women in this respect. However, depressive symptoms did not significantly predict hostile attributions for men or women.

Sobel's test for Model 3b

Lastly, the difference between path c and path ć was calculated in order to estimate how well the mediating role of depressive symptoms accounts for the relationship between parenting stress and hostile attributions (Krull & McKinnon, 2001). Results showed that depressive symptoms were not a significant mediator for men or women.

Discussion

The purpose of this study was to examine whether hostile attributions increase over the transition to parenthood and whether life stress, parenting stress, depressive symptoms, or trait hostility predict this trend. More specifically, I examined both life stress and parenting stress as predictors of hostile attributions. This relationship was further explored by examining trait hostility as a time-invariant moderator and depression as a time-varying mediator.

In general, hostile attributions were higher in pregnancy, decreased by the first year postpartum, then increased somewhat by the second year postpartum. Both levels of life stress and parenting stress predicted both current levels of hostile attributions as well as changes in hostile attributions over time. These findings provide evidence that negative affect from the individual's life may spillover into the intimate partner relationship, possibly impacting relationship functioning.

Life Stress & Parenting Stress as Predictors of Hostile Attributions

I hypothesized that as life stress and parenting stress increased over the transition to parenthood, hostile attributions made toward a partner would also increase. In this study, both life stress and parenting stress significantly predicted hostile attributions over time. Indeed, parents who perceived increased life stress and parenting stress over this transition were more likely to have increased levels of hostile attributions toward their partner. Previous findings have also linked higher stress levels with negative relationship outcomes over the transition to parenthood (Durtschi, Soloski, & Kimmes, 2017; Randall & Bodenmann, 2009).

Stress in the context of marital relationships became more widely studied in the 1990s (Randall & Bodenmann, 2009). The transition to parenthood is often considered a particularly stressful life transition. Indeed, in this study, participants generally reported increases in stress

levels from pregnancy to the postpartum period. Stress in close relationships can be conceptualized by its intensity (major versus minor), duration (acute versus chronic), and from where it originates (outside or inside the relationship; Randall & Bodenmann, 2009). Over the transition to parenthood, parents may feel a range of intensities in their stress, may feel like the transition was an acute stressor or just the start of a chronic life stress, and may experience stress from outside the relationship or from within the intimate partner relationship itself. On top of this, there may be differences within and between couples in vulnerabilities in abilities to cope with stress (Karney & Bradbury, 1995). The findings of this study may point to a type of impairment within dyadic coping – attributing hostile intent to a partner's behaviour. Since stress was a strong predictor of hostile attributions, this may be evidence for a cognitive mechanism through which relationship functioning deteriorates in early parenthood.

My findings support the notion that stress from outside the intimate partner relationship, spills over into the relationship by impacting the way that partners view each other. The effect of stress may reach beyond the intimate partner relationship and may spillover into the parent-child relationship as well (Kouros, Geoke-Morey, Papp, & Cummings, 2014; Newland, Ciciolla, & Crnic, 2015). If a distressed individual were to attribute hostile intent to their partner's ambiguous actions, it would not be surprising if they did the same with their child's actions. As expected, one parent's hostility toward the other was found to compromise their ability to maintain a positive relationship with his or her child (Kouros et al., 2014; Newland et al., 2015). When both mothers and fathers report symptoms of hostility, they were more likely to engage in harsh parenting practices with their children (Newland et al., 2015). Indeed, a general parental tendency to attribute more hostile intent to ambiguous actions is related to greater externalizing behaviours in their children (Halligan, Cooper, Healy, & Murray (2007). Not only are hostile

attributions damaging to the intimate partner relationship, but they can also have serious impacts on the child's developmental outcomes (e.g. defiance, losing temper, bullying) since the quality of the parent-child relationship during this period can establish long term socioemotional functioning for the child (Zvara, Mills-Koonce, & Cox, 2016).

The Interaction Between Trait Hostility and Stress

The interaction of trait hostility with levels of stress yielded interesting and mixed results. I hypothesized that stress would "activate" trait hostility within those who were high in trait hostility, leading to higher levels of hostile attributions made toward a partner. However, contrary to expectations, the opposite effect was observed. Men who were low on trait hostility increased in hostile attributions when in the context of high stress, whereas men high on trait hostility were high on hostile attributions regardless of stress level. Past research has mainly focused on high levels of trait hostility and their subsequent effects on close relationships using clinical samples of men who have engaged in IPV in the past (Downey & Feldman, 1996; Epps & Kendall, 1995, Norlander & Eckhardt, 2005; Vollrath, 2001), or adolescent boys who have been flagged for behavioural issues (Crick & Dodge, 1994; Orobio de Castro et al., 2002). The current study highlights how community samples should also be studied, as men who may not be normally be flagged may also need interventions.

Trait hostility also significantly predicted base rates of hostile attributions for men, but not for women. Further, it was notable that high levels of trait hostility in men predicted hostile attributions, whereas the same effect was not found in women, even though there were no significant gender differences in levels of baseline trait hostility. Interestingly, past research has traditionally focused on trait hostility only in men (Downey, Feldman, & Ayduk, 2000; Epps & Kendall, 1995), suggesting that, even if trait hostility is present in women, it may not have the

same impact on their cognitions and behaviours. Perhaps there is a socialization factor for each gender, with certain attributional thinking being encouraged or more accepted in men than in women. For women, the female gender role may buffer against hostile attributions made toward a partner. Perhaps an internalization of patriarchal values is reflected in this effect. It may be possible that women in this sample still perceived the external forces and relationships as hostile and threatening, but did not perceive their partners to be threatening in order to preserve the relationship. Further exploration into co-parenting alliance or perceived partner support would provide a deeper understanding of potential mechanisms at work for women in this sample.

For men, the general pattern of hostile attributions started off higher (relative to self), then dipped at the first year postpartum, then came up again by the second year postpartum. Interestingly, for high trait hostile men (one standard deviation above the mean), trait hostility was not "activated" by life stress to result in higher hostile attributions (please see Table 18). Those who were high in trait hostility were more likely to have higher hostile attributions toward their partner regardless of stress levels. Conversely, men who were low in trait hostility (one standard deviation below the mean), but were stressed, were more likely to have higher levels of hostile attributions than low trait hostility men with low stress levels.

Men who are high in trait hostility may have shown a ceiling effect in their hostile attributions. Since they started much higher in their levels of hostile attributions (relative to low and average trait hostile men), their score on the Partner Attributions Questionnaire may not have been able to fluctuate, hitting close to the limit or decreasing slightly over time. Regardless of both parenting and life stress levels, this cognitive style seemed to be present in men who are high in trait hostility, which aligns with the notion that trait hostility is considered a stable personality trait. Indeed, men with high trait hostility had a much higher mean of life stress than

men who are low in trait hostility (please see Table 15 and Table 16). There may be similar ceiling effects for these men in their life stress as well. Perhaps men who are high in trait hostility experience more stress because they perceive their world to be more threatening and hostile than others with lower levels of hostility.

For men who were low in trait hostility, there was a clear relationship between increases in levels of life stress and parenting stress predicting increases in hostile attributions (please see Tables 17 & 23). For these men, changes in hostile attributions seemed more possible, rather than the rigid pattern that was observed in high trait hostile men. This difference between groups may be useful for clinicians to know if interventions are to be implemented.

Depressive Symptoms as a Mediator of the Link Between Stress and Hostile Attributions

For both men and women, stress was a direct predictor of hostile attributions over the transition to parenthood. As well, depressive symptoms were a direct predictor of hostile attributions over the transition to parenthood in men. Surprisingly, depressive symptoms did not predict hostile attributions for women, in contrast to extensive evidence on the link between depressive symptoms and relationship quality in women over the transition to parenthood (Cutrona, 1984; Overall & Hammond, 2013; Parade, Blankson, Leerkes, Crockenberg, & Faldowski, 2014; Simpson, Rholes, Campbell, Tran & Wilson, 2003). Studies examining the impact of depressive symptoms on relationship functioning in women have found a relationship between higher levels of depressive symptoms and impaired relationship functioning such as decreased perceived support from the husband, low agreement and greater conflict, as well as lower overall relationship satisfaction (McKenzie et al., 2014; Simpson et al., 2003; Sipsma et al., 2016). Some studies have found similar effects in men (Condon et al., 2003; Figueiredo et al., 2008).

Though previous research has shown that high levels of stress predict depressive symptoms in men over the transition to parenthood (Condon, Boyce, & Corkindale, 2003), depressive symptoms were not found to mediate the relationship between stress and hostile attributions in the current study as proposed. However, stress and depressive symptoms were highly correlated with one another for both men and women, which is consistent with past research in this area (Campbell, Cohn, Flanagan, Popper, & Meyers, 1992; Condon et al., 2003; Cutrona, 1984; Simpson et al., 2003). In this study, life stress, parenting stress, and depressive symptoms in men all had unique contributions in predicting hostile attributions over time. A possible explanation for the latter may be that men are more likely to experience unmet expectations in the relationship following the birth of the child, such as changes in the couple's sexual desire and functioning (Condon, 2003), less quality time spent together, or less perceived partner support. Another possible reason for increased depressive symptoms in men over the transition to parenthood may be a lack of parental self-efficacy if they are unprepared for the transition to parenthood and have not had opportunities to learn parenting skills. In addition to providing general life skills training to address increases in life stress over the transition to parenthood, there are also evidence-based preventative parenting interventions such as Parent Management Training – Oregon Model (PMTO) that have been shown to help a range of families by reducing levels of coercion and altering family environments (Degarmo, Patterson, & Forgatch, 2004; Patterson, Forgatch, & DeGarmo, 2010). This study may aid in filling in the gap in the literature regarding paternal depression and its subsequent effect on the intimate partner relationship by highlighting the relationship between depressive symptoms and hostile attributions.

Historically, research on depression focused solely on women over the transition to parenthood. The findings from the current study suggest that research should shift its lens to examine depressive symptomology in men as well as in women. Having a depressed mother in early childhood has been shown to predict externalizing behaviours in children, including poorer self-regulation and the development of hostile attributions toward others (Wang & Dix, 2017). Future research should explore whether this effect is also present in father-child relationships. In addition to this, not only can depressive symptoms negatively affect child outcomes, but they can take a toll on the intimate partner relationship as well, since depressive symptoms of one partner may add to the pre-existing stress of the other (Forman et al., 2007). Examining the relationship between paternal depressive symptoms and family outcomes would help fill in current gaps in the literature regarding fathers' mental health and the transition to parenthood.

Future Research Directions & Clinical Implications

In terms of future directions, longitudinal research within communities is needed in order to examine outcomes beyond two years postpartum in order to ascertain longer term family outcomes. Examining relationship adjustment and intimate partner violence as outcomes may aid in determining whether hostile attributions are predictors of distress and violence during early family formation. Indeed, Gottman's (1993) theory of flooding within intimate partner relationships may serve as a starting point for how to conceptualize the effect of stress on the individual's ability to cope within the dyad. If a partner is overwhelmed by the other's negative affect, stress levels increase, resulting a reduced ability to cope (Gottman, 1993). This reduced ability to cope may result in even more hostile attributions made toward a partner. It is possible that partners are caught in a cycle of escalating hostile attributions which may lead to IPV. Moreover, examining hostile attributions and relationship adjustment as predictors of child adjustment over time would provide a rich depiction of the family system.

Another area to explore is what other factors, beyond stress, are at play for women over the transition to parenthood that may affect the intimate partner relationship. For example, women may experience unmet expectations over the transition to parenthood, such as a perceived lack of emotional support, inequality in dividing household tasks, or a lack of parenting alliance. Finally, researchers should concentrate their attention on stress and depressive symptoms in men over the transition to parenthood by *including* men in their studies, rather than solely focusing on women.

Supplementing quantitative research with qualitative methods would give researchers a deeper understanding of the lives of family members. A mixed-method approach would allow participants to identity how their thoughts about their partner have changed as well as why they

suspect these changes occurred over the transition to parenthood. Using qualitative methods would give participants the freedom to provide researchers responses that are free from the constraints of predetermined answers in measures.

Improving stress coping abilities during the transition to parenthood should be a priority for public policy makers in order to prevent negative trajectories in relationship functioning and child outcomes. Pregnancy offers a perfect opportunity for cost-effective, short-term couple interventions since pregnant couples have structured and consistent contact with health care professionals. Adding screens for levels of stress, trait hostility, and depressive symptoms could be relatively easy to include in a regular check-up with a family doctor or gynecologist in order to identify those who are at risk for developing higher levels of hostile attributions. In particular, hostile attributions should be screened since they are a strong predictor of IPV, in order to intervene if there is a more imminent risk of harm. Early targeting of hostile attributions may help to prevent possible relationship deterioration or harm even if the couple is not currently engaging in IPV. If a couple is flagged for any of these issues, they can then be referred for further support such as psychoeducation or therapy. Past research has found that when skills to cope with stress (such as life skills training) are taught to adolescent boys who are high in hostility, it can significantly reduce self-reported hostility (Brown Wright, Gregoski, Tingen, Barnes, & Treiber, 2011). Moreover, learning how to constructively express anger in the context of cognitive-behavioural hostility treatment was also found to decrease levels of hostility in men over time (Davidson, MacGregor, Stuhr, & Gidron, 1999). With researchers demonstrating the ability of interventions to change levels of hostility, it provides reasonable confidence that similar outcomes may be achieved by adapted interventions.

These findings have interesting clinical implications when considering the context in which the child is developing. First, clinicians might focus on working with men who are high in trait hostility, even if they do not seem stressed, to change how they view their partner – particularly if they tend to be frequently attributing hostility to their partner's behaviour. This is important because men who engage in IPV consistently report higher levels of anger and hostility than nonviolent men (Norlander & Eckhardt, 2005). Hostile attributions may be the cognitive mechanism that place highly trait hostile partners at risk for acting on their anger. The second line of intervention may target men who are low in trait hostility, but who are experiencing high levels of perceived life stress. Their levels of hostile attributions may be more susceptible to change, and this pliability may in turn be a strength when considering intervention outcomes. Using an intervention such as life skills training, parenting education, or teaching skills to manage stress, may help to alleviate some of the stress experienced by this group of men.

In another vein, there is evidence that a gender difference may be present in the effect of stress levels on relationship quality. Fathers' stress levels have been found to be more predictive of poor relationship quality than mothers' stress levels, indicating that fathers' stress levels may spillover into the intimate partner relationship more than mothers' stress levels (Durtschi et al., 2017). As such, interventions should also include fathers rather than focus exclusively on mothers. When considering the impact of this hostility spillover effect, perhaps the notion of "stressed out" first time parents warrants more attention by researchers and public policy developers. This is a sensitive developmental period, not only for the intimate partner relationship, but also for the child who will be raised in the new family.

For women, the most important factor related to hostile attributions seemed to be stress itself, rather than stress in the context of trait hostility. Changes in both life stress and parenting stress were longitudinally related to their hostile attributions for women. Clearly, stress is an important factor to consider when supporting women who are transitioning to parenthood. It may be that stress itself is the direct mechanism through which women spillover their negative affect into their intimate partner relationship. Perhaps there are external reasons, such as financial stress or lack of social support, that explain why perceived life stress was so predictive of hostile attributions for women. Interestingly, in a study involving 6,421 women across Canada, 17% of women reported having experienced 3 or more stressful life events in the last year before the birth of their child (Kingston et al., 2010). Further exploration of the effect of stress in the lives of pregnant women may be warranted.

Limitations & Strengths

In terms of limitations, the sample size of the current study may have limited my ability to detect significant effects for some analyses. Using a larger and more diverse sample may lead to more generalizable results and permit researchers to look more specifically at how differences may arise depending on demographic variables. Particularly since the men who dropped out of the study were more likely to be of a low SES background, the participants that remained in the study may have been more homogenous than desired. Therefore these results may not be as representative of these groups. Replicating the study in a larger city, or a rural community, depending on the target population may allow researchers to be more specific in how results apply to similar communities. Furthermore, this study relied exclusively on self-reports, which may have resulted in biased results due to participants wanting to report in a socially desirable manner.

Another limitation is the lack of attention to the positive changes that may occur in the partners' intimate relationships over the transition to parenthood in this study. Not only are there important indicators of relationship dysfunction as identified by this study, but there are certainly indicators of healthy relationships as well. Indeed, some couples feel closer in their intimate partner relationship over the transition to parenthood, viewing this time as a bonding experience, particularly when their expectations of their postnatal experiences were met or exceeded (Lawrence et al., 2007). This highlights the importance of examining what is successful in these relationships and how to foster resiliency over the transition to parenthood.

Lastly, in order to test the mediation of depressive symptoms on the relationship between stress and hostile attributions, the more statistically sophisticated method of bootstrapping could be employed. Bootstrapping allows for generation of resampling on the same sample repeatedly

in order to obtain more precise confidence intervals of a mediation than would be possible through other conservative methods such a Sobel's test (Preacher & Hayes, 2008; Preacher, Zhang, & Zypher, 2011). In particular, a multilevel moderation analysis with bootstrapping would be ideal for conducting the analyses on a smaller sample with longitudinal nested data (Bauer, Preacher, & Gill, 2006). Though the technique is advanced, it would be the most appropriate and statistically accurate method to employ.

In addition to its limitations, the study also had a number of strengths. This study looked at adjustment over the transition to parenthood for both men and women, while also taking a dyadic approach to the data. This provided a fuller depiction of couple functioning as the models took into account partner responses. Moreover, the longitudinal nature of the study allowed for changes over time to be analyzed, providing the opportunity to examine the couple over the entire transition period.

Further, the study included two separate types of stress to account for changes in hostile attributions over the transition to parenthood. This provides more information for researchers and clinicians to apply in their future work. Now, we know that both life stress and parenting stress should be targeted in interventions, rather than just parenting stress over the transition to parenthood.

Importantly, this study focused on changes in hostile attributions and showed that certain couples may be at higher risk for these changes than others. Since hostile attributions have been established in the literature as a predictor of IPV, clinicians can use this information to target predictors of hostile attributions as a preventative measure before couples begin to experience serious relationship difficulties.

Conclusion

In conclusion, life stress, parenting stress, depressive symptoms, and trait hostility were significant predictors of hostile attributions for men during the transition to parenthood, but only life stress and parenting stress were significant predictors of hostile attributions in women during this time. These findings add to the growing body of knowledge on the transition to parenthood and the mental health and cognitive biases of partners. These findings may be important for clinicians and practitioners working with partners who are transitioning to parenthood. Screening for these traits and patterns may provide clinicians with an opportunity for intervention as well as inform the method of intervention needed in order to more widely prevent the possibility of relationship distress and intimate partner violence during early parenthood.

References

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology*, *30*(1), 47-88.

Anding, J. E., Röhrle, B., Grieshop, M., Schücking, B., & Christiansen, H. (2016). Couple comorbidity and correlates of postnatal depressive symptoms in mothers and fathers in the first two weeks following delivery. *Journal of Affective Disorders*, *190*, 300-309.

Arriaga, X. B., & Schkeryantz, E. L. (2015). Intimate relationships and personal distress: The invisible harm of psychological aggression. *Personality and Social Psychology Bulletin*, *41*(10), 1332-1344.

Bauer, D. J., Preacher, K. J., & Gil, K. M. (2006). Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: new procedures and recommendations. *Psychological Methods*, *11*(2), 142.

Beck, A. T. (1967). *Depression: Clinical, Experimental, and Theoretical Aspects*. University of Pennsylvania Press.

Becker, E. W., & Lesiak, W. J. (1977). Feelings of hostility and personal control as related to depression. *Journal of Clinical Psychology*, *33*(3), 654-657.

Belsky, J. (1985). Exploring Individual Differences in Marital Change across the Transition to Parenthood: The Role of Violated Expectations. *Journal of Marriage and Family, 47*(4), 1037-1044. doi:10.2307/352348

Belsky, J., Spanier, G., & Rovine, M. (1983). Stability and change in marriage across the transition to parenthood. *Journal of Marriage and the Family, 45*(3), 567-577.

Belsky, J., & Kelly, J. (1995). *The transition to parenthood: how a first child changes a marriage: why some couples grow closer and others apart: Based on a landmark study*. Dell Books.

Bodenmann, G. (1997). The influence of stress and coping on close relationships: A two- year longitudinal study. *Swiss Journal of Psychology*, 56, 156−164.

Bodenmann, G. (2005). Dyadic coping and its significance for marital functioning. *Couples coping with stress: Emerging perspectives on dyadic coping*, *1*(1), 33-50.

Bodenmann, G., Ledermann, T., & Bradbury, T. N. (2007). Stress, sex, and satisfaction in marriage. *Personal Relationships*, 14, 407−425.

Bodenmann, G., Meuwly, N., Bradbury, T. N., Gmelch, S., & Ledermann, T. (2010). Stress, anger, and verbal aggression in intimate relationships: Moderating effects of individual and dyadic coping. *Journal of Social and Personal Relationships*, *27*(3), 408-424.

Bost, K. K., Cox, M. J., Burchinal, M. R., & Payne, C. (2002). Structural and supportive changes in couples' family and friendship networks across the transition to parenthood. *Journal of Marriage and Family*, *64*(2), 517-531.

Bowen, M. (1966). The use of family theory in clinical practice. *Comprehensive Psychiatry,* 7(5), 345-374.

Bryk, A. S., & Raudenbush, S. W. (1987). Application of hierarchical linear models to assessing change. *Psychological Bulletin*, *101*(1), 147.

Castro, B. O., Veerman, J. W., Koops, W., Bosch, J. D., & Monshouwer, H. J. (2002). Hostile attribution of intent and aggressive behavior: A meta-analysis. *Child Development*, *73*(3), 916-934.

Campbell, S. B., Cohn, J. F., Flanagan, C., Popper, S., & Meyers, T. (1992). Course and correlates of postpartum depression during the transition to parenthood. *Development and Psychopathology*, *4*(1), 29-47.

Chang, S. R., Chang, T. C., Chen, K. H., & Lin, H. H. (2010). Sexual function in women 3 days and 6 weeks after childbirth: a prospective longitudinal study using the Taiwan version of the Female Sexual Function Index. *The Journal of Sexual Medicine*, *7*(12), 3946-3956.

Cohen, S., Kamarck, T., & Mermelstein, R. (1994). Perceived stress scale. *Measuring stress: A guide for health and social scientists*.

Cohen, S., Schulz, M. S., Liu, S. R., Halassa, M., & Waldinger, R. J. (2015). Empathic accuracy and aggression in couples: Individual and dyadic links. *Journal of Marriage and Family*, *77*(3), 697-711.

Collins, N., Ford, M., Guichard, A., & Allard, L. (2015). Working models of attachment and attachment processes in intimate relationships. *Personality and Social Psychology Bulletin,* 32(2), 201-219.

Cook, W. & Kenny, D. (2005). The actor-partner independence model: A model of bidirectional effects in developmental studies. *International Journal of Behavioural Development 29*(2), 101-109.

Cooklin, A. R., Giallo, R., & Rose, N. (2012). Parental fatigue and parenting practices during early childhood: An Australian community survey. *Child: Care, Health and Development*, *38*(5), 654-664.

Cowan, P. & Cowan, C. (1988). Changes in marriage during the transition to parenthood: Must we blame the baby? In Michaels, G. & Goldberg, W., *The transition to parenthood: Current theory and research* (114-149).

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, *115*(1), 74.

Cutrona, C. E. (1984). Social support and stress in the transition to parenthood. *Journal of Abnormal Psychology*, *93*(4), 378.

Debono, C., Borg Xuereb, R., Scerri, J., & Camilleri, L. (2017). Intimate partner violence: psychological and verbal abuse during pregnancy. *Journal of Clinical Nursing*.

DeGarmo, D. S., Patterson, G. R., & Forgatch, M. S. (2004). How do outcomes in a specified parent training intervention maintain or wane over time?. *Prevention Science*, *5*(2), 73-89.

Dodge, K. A., Price, J. M., Bachorowski, J. A., & Newman, J. P. (1990). Hostile attributional biases in severely aggressive adolescents. *Journal of Abnormal Psychology*, *99*(4), 385.

Doss, B. D., Rhoades, G. K., Stanley, S. M., & Markman, H. J. (2009). The effect of the transition to parenthood on relationship quality: an 8-year prospective study. *Journal of Personality and Social Psychology*, *96*(3), 601.

Downey, G., & Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology*, *70*(6), 1327.

Downey, G., Feldman, S., & Ayduk, O. (2000). Rejection sensitivity and male violence in romantic relationships. *Personal Relationships*, *7*(1), 45-61.

Durtschi, J. A., Soloski, K. L., & Kimmes, J. (2017). The dyadic effects of supportive coparenting and parental stress on relationship quality across the transition to parenthood. *Journal of Marital and Family Therapy*, *43*(2), 308-321.

Eckhardt, C. I., Barbour, K. A., & Davison, G. C. (1998). Articulated thoughts of maritally

violent and nonviolent men during anger arousal. *Journal of Consulting and Clinical Psychology, 66,* 259–269.

Eckhardt, C. I., & Dye, M. L. (2000). The cognitive characteristics of maritally violent men: Theory and evidence. *Cognitive Therapy and Research, 2,* 139–158.

Epifanio, Maria Stella, Vitalba Genna, Caterina De Luca, Michele Roccella, and Sabina La Grutta. "Paternal and maternal transition to parenthood: the risk of postpartum depression and parenting stress." *Pediatric Reports* 7, no. 2 (2015).

Epps, J., & Kendall, P. C. (1995). Hostile attributional bias in adults. *Cognitive Therapy and Research*, *19*(2), 159-178.

Fava, M., Nolan, S., Kradin, R., & Rosenbaum, J. (1995). Gender differences in hostility among depressed and medical outpatients. *The Journal of Nervous and Mental Disease*, *183*(1), 10-14.

Fedele, N., Golding, E., Grossman, F., & Pollack, W. (1988). Psychological issues in adjustment to first parenthood. In Michaels, G. & Goldberg, W., *The transition to parenthood: Current theory and research* (85-113).

Fincham, F. D., Bradbury, T. N., Arias, I., Byrne, C. A., & Karney, B. R. (1997). Marital violence, marital distress, and attributions. *Journal of Family Psychology, 11,* 367–372.

Foran, H. M., & Slep, A. M. S. (2007). Validation of a self-report measure of unrealistic relationship expectations. *Psychological Assessment*, *19*(4), 382.

Forman, D. R., O'hara, M. W., Stuart, S., Gorman, L. L., Larsen, K. E., & Coy, K. C. (2007). Effective treatment for postpartum depression is not sufficient to improve the developing mother–child relationship. *Development and Psychopathology*, *19*(02), 585-602.

Gavin, N. I., Gaynes, B. N., Lohr, K. N., Meltzer-Brody, S., Gartlehner, G., & Swinson, T. (2005). Perinatal depression: a systematic review of prevalence and incidence. *Obstetrics & Gynecology*, *106*(5, Part 1), 1071-1083.

Gjerdingen, D. K., & Center, B. A. (2003). First-time parents' prenatal to postpartum changes in health, and the relation of postpartum health to work and partner characteristics. *The Journal of the American Board of Family Practice*, *16*(4), 304-311.

Gottman, J. M. (1993). A theory of martial dissolution and stability. *Journal of Family Psychology, 7,* 57-75.

Grant, K. A., McMahon, C., & Austin, M. P. (2008). Maternal anxiety during the transition to parenthood: a prospective study. *Journal of Affective Disorders*, *108*(1), 101-111.

Halligan, S., Cooper, P., Healy, S., & Murray, L. (2007). The attribution of hostile intent in mothers and fathers and their children. *Journal of Abnormal Child Psychology, 35,* 594-604.

Hartley, S., Barker, E., Seltzer, M., Greenberg, J., & Floyd, F. (2011). Marital satisfaction and parenting experiences of mothers and fathers of adolescents and adults with autism. *American Journal on Intellectual and Developmental Disabilities, 116*(1), 81–95. doi:10.1352/1944-7558-116.1.81

Holtzworth-Munroe, A. (1991). Applying the social information processing model to maritally violent men. *Behavior Therapist, 14,* 129–132.

Holtzworth-Munroe, A., & Hutchinson, G. (1993). Attributing negative intent to wife behavior: The attributions of maritally violent versus nonviolent men. *Journal of Abnormal Psychology, 102,* 206–211.

Holtzworth-Munroe, A., Markman, H., O'Leary, K. D., Neidig, P., Leber, D., Heyman, R. E., et al. (1995). The need for marital violence preven- tion efforts: A behavioral-cognitive secondary prevention program for engaged and newly married couples. *Applied and Preventive Psychology, 4*(2), 77–88.

Holtzworth-Munroe, A., & Stuart, G. L. (1994). The relationship standards and assumptions of violent versus nonviolent husbands. *Cognitive Therapy & Research, 18*(2), 87–103.

Ispa, J. M., Sable, M. R., Porter, N., & Csizmadia, A. (2007). Pregnancy Acceptance, Parenting Stress, and Toddler Attachment in Low-Income Black Families. *Journal of Marriage and Family*, *69*(1), 1-13.

Karney, B. R., & Bradbury, T. N. (1995). The longitudinal course of marital quality and stability: A review of theory, method, and research. *Psychological Bulletin, 118,* 3–34.

Karney, B. R., Story, L. B., & Bradbury, T. N. (2005). Marriages in context: Interactions between chronic an acute stress among newlyweds. In T. A. Revenson, K. Kayser, & G. Bodenmann (Eds.), *Couples coping with stress: Emerging perspectives on dyadic coping* (pp. 13−32). Washington, D.C.: American Psychological Association.

Kaur, R., & Garg, S. (2008). Addressing domestic violence against women: An unfinished agenda. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, *33*(2), 73.

Kawabata, Y., Crick, N. R., & Hamaguchi, Y. (2013). The association of relational and physical victimization with hostile attribution bias, emotional distress, and depressive symptoms: A cross-cultural study. *Asian Journal of Social Psychology*, *16*(4), 260-270.

Khajehei, M. (2016). Parenting challenges and parents' intimate relationships. *Journal of Human Behavior in the Social Environment,* 26:5, 447-451, DOI: 10.1080/10911359.2015.1083509

Khajehei, M. (2016). Prevalence and Risk Factors of Relationship Dissatisfaction in Women During the First Year After Childbirth: Implications for Family and Relationship Counseling. *Journal of Sex & Marital Therapy*, *42*(6), 484-493.

Khajehei, M., Doherty, M., Tilley, P., & Sauer, K. (2015). Prevalence and risk factors of sexual dysfunction in postpartum Australian women. *Journal of Sexual Medicine,* 12, 1415–1426. doi:10.1111/jsm.2015.12.issue-6

Ki, Y., & Joanne, C. (2014). Stress and marital satisfaction of parents with children with disabilities in Hong Kong. *Psychology*, 5, 349–357. doi:10.4236/psych.2014.55045

Kingston, D., Heaman, M., Fell, D., Dzakpasu, S., & Chalmers, B. (2012). Factors associated with perceived stress and stressful life events in pregnant women: findings from the Canadian Maternity Experiences Survey. *Maternal and Child Health Journal*, *16*(1), 158-168.

Lawson, D. & Brossait, D. (2013). Interpersonal problems and personality features as mediators between attachment and intimate partner violence. *Violence and Victims, 28*(3), 414-428.

Lawson, D. M., & Malnar, S. G. (2011). Interpersonal problems as a mediator between attachment and intimate partner violence. *Journal of Family Violence*, *26*(6), 421-430.

Lawrence, E., Nylen, K., & Cobb, R. J. (2007). Prenatal expectations and marital satisfaction over the transition to parenthood. *Journal of Family Psychology*, *21*(2), 155.

Lawrence, E., Rothman, A. D., Cobb, R. J., Rothman, M. T., & Bradbury, T. N. (2008). Marital satisfaction across the transition to parenthood. *Journal of Family Psychology*, *22*(1), 41.

Lemay, E. P., & Spongberg, K. (2015). Perceiving and wanting to be valued by others: Implications for cognition, motivation, and behavior in romantic relationships. *Journal of Personality*, *83*(4), 464-478.

Li, J., Robinson, M., Malacova, E., Jacoby, P., Foster, J., & Van Eekelen, A. (2013). Maternal life stress events in pregnancy link to children's school achievement at age 10 years. *The Journal of Pediatrics*, *162*(3), 483-489.

Mathieson, L. C., Murray-Close, D., Crick, N. R., Woods, K. E., Zimmer-Gembeck, M., Geiger, T. C., & Morales, J. R. (2011). Hostile intent attributions and relational aggression: The moderating roles of emotional sensitivity, gender, and victimization. *Journal of Abnormal Child Psychology*, *39*(7), 977.

Miller, T. Q., Smith, T. W., Turner, C. W., Guijarro, M. L., & Hallet, A. J. (1996). Meta-analytic review of research on hostility and physical health. *Psychological Bulletin*, *119*(2), 322.

Moel, J. E., Buttner, M. M., O'Hara, M. W., Stuart, S., & Gorman, L. (2010). Sexual function in the postpartum period: effects of maternal depression and interpersonal psychotherapy treatment. *Archives of Women's Mental Health*, *13*(6), 495-504.

Nelson, S. K., Kushlev, K., & Lyubomirsky, S. (2014). The pains and pleasures of parenting: When, why, and how is parenthood associated with more or less well-being?. *Psychological Bulletin*, *140*(3), 846.

Nonterah, C. W., Garthe, R. C., Reid, C. A., Worthington, E. L., Davis, D. E., Hook, J. N., ... & Griffin, B. J. (2016). The impact of stress on fluctuations in relational humility as couples transition to parenthood. *Personality and Individual Differences*, *101*, 276-281.

Norlander, B., & Eckhardt, C. (2005). Anger, hostility, and male perpetrators of intimate partner violence: A meta-analytic review. *Clinical Psychology Review*, *25*(2), 119-152.

Orobio De Castro, B. O., Veerman, J. W., Koops, W., Bosch, J. D., & Monshouwer, H. J. (2002). Hostile attribution of intent and aggressive behavior: A meta-analysis. *Child Development*, *73*(3), 916-934.

Overall, N. C., & Hammond, M. D. (2013). Biased and accurate: Depressive symptoms and daily perceptions within intimate relationships. *Personality and Social Psychology Bulletin*, *39*(5), 636-650.

Parade, S. H., Blankson, A. N., Leerkes, E. M., Crockenberg, S. C., & Faldowski, R. (2014). Close relationships predict curvilinear trajectories of maternal depressive symptoms over the transition to parenthood. *Family Relations*, *63*(2), 206-218.

Patterson, G. R., Forgatch, M. S., & DeGarmo, D. S. (2010). Cascading effects following intervention. *Development and Psychopathology*, *22*(4), 949-970.

Perren, S., Von Wyl, A., Bürgin, D., Simoni, H., & Von Klitzing, K. (2005). Depressive symptoms and psychosocial stress across the transition to parenthood: Associations with parental psychopathology and child difficulty. *Journal of Psychosomatic Obstetrics & Gynecology*, *26*(3), 173-183.

Perry-Jenkins, M., Goldberg, A. E., Pierce, C. P., & Sayer, A. G. (2007). Shift work, role overload, and the transition to parenthood. *Journal of Marriage and Family*, *69*(1), 123-138.

Presser, H. B. (2000). Nonstandard work schedules and marital instability. *Journal of Marriage and Family*, *62*(1), 93-110.

Raudenbush, S. W., Brennan, R. T., & Barnett, R. C. (1995). A multivariate hierarchical model for studying psychological change within married couples. *Journal of Family Psychology*, *9*(2), 161.

Rempel, J., Ross, M., & Holmes, J. (2001). Trust and communicated attributions in close relationships. *Journal of Personality and Social Psychology, 81*(1), 57-64.

Schafer, J. L. (1999). Multiple imputation: A primer. *Statistical Methods in Medical Research*, *8*(1), 3-15.

Schoppe-Sullivan, S. J., Settle, T., Lee, J. K., & Kamp Dush, C. M. (2016). Supportive coparenting relationships as a haven of psychological safety at the transition to parenthood. *Research in Human Development*, *13*(1), 32-48.

Singer, J. D., & Willet, J. B. (2003). A framework for investigating change over time. *Applied longitudinal data analysis: Modeling change and event occurrence*, 3-15.

Simpson, J. A., Rholes, W. S., Campbell, L., Tran, S., & Wilson, C. L. (2003). Adult attachment, the transition to parenthood, and depressive symptoms. *Journal of Personality and Social Psychology*, *84*(6), 1172.

Sipsma, H. L., Callands, T., Desrosiers, A., Magriples, U., Jones, K., Albritton, T., & Kershaw, T. (2016). Exploring Trajectories and Predictors of Depressive Symptoms Among Young Couples During Their Transition to Parenthood. *Maternal and Child Health Journal*, *20*(11), 2372-2381.

Skouteris, H., Wertheim, E. H., Rallis, S., Milgrom, J., & Paxton, S. J. (2009). Depression and anxiety through pregnancy and the early postpartum: an examination of prospective relationships. *Journal of Affective Disorders*, *113*(3), 303-308.

Slep, A. M. S., & O'Leary, S. G. (2001). Examining partner and child abuse: Are we ready for a more integrated approach to family violence?. *Clinical Child and Family Psychology Review*, *4*(2), 87-107.

Suls, J., & Wan, C. K. (1993). The relationship between trait hostility and cardiovascular reactivity: A quantitative review and analysis. *Psychophysiology*, *30*(6), 615-626.

Tsao, Y., Creedy, D. K., & Gamble, J. (2016). A Comparison of Life Stress and Depressive Symptoms in Pregnant Taiwanese and Immigrant Women. *Journal of Nursing Research*, *24*(3), 272-281.

Vall, B., Seikkula, J., Laitila, A., & Holma, J. (2016). Dominance and dialogue in couple therapy for psychological intimate partner violence. *Contemporary Family Therapy*, *38*(2), 223-232.

Vismara, L., Rollè, L., Agostini, F., Sechi, C., Fenaroli, V., Molgora, S., ... & Polizzi, C. (2016). Perinatal parenting stress, anxiety, and depression outcomes in first-time mothers and fathers: a 3-to 6-months postpartum follow-up study. *Frontiers in Psychology*, *7*.

Vollrath, M. (2001). Personality and stress. *Scandinavian Journal of Psychology*, *42*(4), 335-347.

Ward, T. S., Kanu, F. A., & Robb, S. W. (2017). Prevalence of stressful life events during pregnancy and its association with postpartum depressive symptoms. *Archives of Women's Mental Health*, *20*(1), 161-171.

Werner, N. (2012). Do hostile attribution biases in children and parents predict relationally aggressive behaviour? *The Journal of Genetic Psychology. 173*(3), 221-245.

Yim, I., Tanner Stapleton, L., Guardino, C., Hahn-Holbrook, J., & Dunkel Schetter, C. (2015). Biological and psychosocial predic- tors of postpartum depression: Systematic review and call for integration. *Annual Review of Clinical Psychology,* 11, 99–137.

Zvara, B. J., Mills-Koonce, R., & Cox, M. (2017). Maternal childhood sexual trauma, child directed aggression, parenting behavior, and the moderating role of child sex. *Journal of Family Violence*, *32*(2), 219-229.

Zhao, X., Lynch, J., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research, 37*(2), 197-206.

Tables

Table 1. Demographic Characteristics

Characteristic	Time 1	Time 2	Time 3
Men			
Age	32.03 (5.51)	33.92 (4.91)	34.71 (5.00)
Ethnicity			
Caucasian	87	66	60
Asian	4	4	4
Indigenous	3	2	3
Latino	1	1	0
Other	3	2	2
Marital status			
Legally married	68	60	46
Unmarried	30	17	9
Years of education	14.77 (2.38)	15.16 (2.24)	15.14 (2.25)
Annual income	$51,716 ($35,254)	$49,598 ($26,704)	$55,485 ($29,751)
Women			
Age	29.98 (5.49)	31.02 (5.07)	32.24 (4.78)
Ethnicity			
Caucasian	86	75	63
African	1	0	0
Asian	7	6	5
East Indian	1	1	1
First Nations	2	2	2
Latina	1	1	0
Marital Status			
Legally married	68	65	48
Unmarried	30	22	11
Years of Education	15.28 (2.31)	15.34 (2.45)	15.70 (2.19)
Annual income	$35,019 ($24,825)	$27,962 ($23,689)	$31,705 ($25,483)

Table 2. Descriptive statistics of variables at Time 1

	Men					Women				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Trait Hostility	98	12	28	17.82	4.34	98	12	27	16.85	3.90
Perceived Stress	98	3	37	20.58	7.27	98	7	42	21.45	7.91
Depressive Symptoms	98	0	25	7.58	6.13	98	0	49	11.19	9.04
Hostile Attributions	98	16	35	26.11	4.02	98	21	43	25.18	3.53

Table 3. Descriptive statistics of variables at Time 2

	Men					Women				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Perceived Stress	79	4	43	21.72	7.72	88	6	42	22.39	8.23
Parenting Stress	79	38	113	62.73	18.00	84	36	118	61.10	21.63
Depressive Symptoms	79	0	33	9.20	7.66	88	0	41	9.55	8.53
Hostile Attributions	79	10	45	22.94	9.33	84	10	36	18.50	8.05

Table 4. Descriptive statistics of variables at Time 3

	Men					Women				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Perceived Stress	75	4	44	21.48	8.05	76	6	43	21.34	8.03
Parenting Stress	75	36	100	63.28	17.98	76	36	119	60.63	20.73
Depressive Symptoms	75	0	31	8.96	8.27	76	0	30	8.46	8.23
Hostile Attributions	75	10	53	23.73	10.36	76	10	54	19.92	10.36

Table 5. Correlations: Men at Time 1

	1.	2.	3.	4.	Mean	SD	N
1. Perceived Stress	–				20.58	7.27	98
2. Trait Hostility	.38**	–			17.82	4.34	98
3. Depressive Symptoms	.68**	.48**	–		7.58	6.13	98
4. Hostile Attributions	.28**	.31**	.22*	–	26.11	4.02	98

*P <.05 **P <.01

Table 6. Correlations: Women at Time 1

	1.	2.	3.	4.	Mean	SD	N
1. Perceived Stress	–				21.45	7.90	98
2. Trait Hostility	.48**	–			16.85	3.90	98
3. Depressive Symptoms	.62**	.38**	–		11.19	9.04	98
4. Hostile Attributions	.28**	.40**	.24*	–	25.18	3.53	98

*P <.05 **P <.01

Table 7. Correlations: Men at Time 2

	1.	2.	3.	4.	5.	Mean	SD	N
1. Perceived Stress	–					21.72	7.72	79
2. Parenting Stress	.45**	–				62.73	18.00	79
3. Trait Hostility	.43**	.33**	–			17.82	4.34	98
4. Depressive Symptoms	.71**	.46**	.36**	–		9.20	7.67	79
5. Hostile Attributions	.38**	.43**	.44**	.44**	–	22.94	9.33	79

*P <.05 **P <.01

Table 8. Correlations: Women at Time 2

	1.	2.	3.	4.	5.	Mean	SD	N
1. Perceived Stress	–					22.39	8.22	88
2. Parenting Stress	.52**	–				61.10	21.62	84
3. Trait Hostility	.39**	.35**	–			16.85	3.90	98
4. Depressive Symptoms	.71**	.40**	.37**	–		9.55	8.53	88
5. Hostile Attributions	.21	.47**	.20	.22*	–	18.50	8.05	84

*P <.05 **P <.01

Table 9. Correlations: Men at Time 3

	1.	2.	3.	4.	5.	Mean	SD	N
1. Perceived Stress	–					21.48	8.05	75
2. Parenting Stress	.45**	–				63.28	17.98	75
3. Trait Hostility	.26*	.32**	–			17.82	4.34	98
4. Depressive Symptoms	.64**	.38**	.055	–		8.96	8.27	75
5. Hostile Attributions	.30**	.46**	.43**	.20	–	23.73	10.36	75

*P <.05 **P <.01

Table 10. Correlations: Women at Time 3

	1.	2.	3.	4.	5.	Mean	SD	N
1. Perceived Stress	–					21.34	8.03	76
2. Parenting Stress	.47**	–				60.63	20.73	76
3. Trait Hostility	.29*	.39**	–			16.85	3.90	98
4. Depressive Symptoms	.82**	.48**	.27*	–		8.46	8.38	76
5. Hostile Attributions	.20**	.28*	.43**	.22	–	19.92	10.64	76

*P <.05 **P <.01

Table 11. Unconditional model

	Men				Women			
Hostile Attributions	β	*SE*	*P*	*ES*	β	*SE*	*P*	*ES*
Intercept	26.08	0.41	<0.001	0.99	25.21	0.36	<0.001	0.99
Linear Time	-4.95	1.34	<0.001	0.36	-10.31	1.35	<0.001	0.62
Quadratic Time	1.91	0.63	<0.01	0.30	3.76	0.65	<0.001	0.51

Table 12. Model 1a: Life stress on hostile attributions

	Men				Women			
Hostile Attributions	β	*SE*	*P*	*ES*	β	*SE*	*P*	*ES*
Intercept	26.05	0.83	<0.001	0.96	24.92	0.74	<0.001	0.96
Linear Time	-5.40	1.35	<0.001	0.18	-10.52	1.33	<0.001	0.34
Quadratic Time	1.93	0.64	<0.01	0.30	3.80	0.62	<0.001	0.53
Life Stress	0.18	0.06	<0.01	0.30	0.18	0.05	<0.001	0.36

Table 13. Model 1b: Parenting stress on hostile attributions

	Men				Women			
Hostile Attributions	β	*SE*	*P*	*ES*	β	*SE*	*P*	*ES*
Intercept	21.17	1.78	<0.001	0.56	16.55	1.75	<0.001	0.48
Linear Time	0.39	0.82	>0.50	0.05	1.08	0.83	>0.10	0.14
Parenting Stress	0.18	0.04	<0.001	0.47	0.18	0.03	<0.001	0.54

Table 14. Model 2a: Interaction of life stress with trait hostility on hostile attributions

	Men				Women			
Hostile Attributions	β	*SE*	*P*	*ES*	β	*SE*	*P*	*ES*
Intercept	26.41	0.79	<0.001	0.86	24.84	0.76	<0.001	0.96
Trait hostility	0.48	0.12	<0.001	0.98	0.14	0.13	> 0.50	0.11
Linear Time	-4.53	1.37	<0.001	0.32	-10.55	1.34	<0.001	0.63
Trait hostility	1.06	0.40	>0.10	0.26	-0.29	0.40	> 0.50	0.08
Quadratic Time	1.54	0.64	<0.01	0.11	3.81	0.63	<0.001	0.26
Trait hostility	-0.41	0.14	<0.05	0.10	0.26	0.23	>0.10	0.05
Life Stress	0.13	0.06	<0.05	0.24	0.14	0.06	<0.05	0.24
Trait hostility	-0.02	0.01	<0.001	0.32	0.004	0.01	>0.50	0.06

Table 15. Descriptive stats for men with low trait hostility and life stress

	N	Mean	SD	Min	Max
Life Stress	51	16.78	8.18	3.00	38.00
Hostile Attributions	51	20.41	6.34	10.00	40.00
Trait Hostility	19	12.42	0.51	12.00	13.00

Table 16. Descriptive stats for men with high trait hostility and life stress

	N	Mean	SD	Min	Max
Life Stress	35	26.57	8.16	8.00	44.00
Hostile Attributions	35	30.66	9.36	14.00	53.00
Trait Hostility	14	24.93	1.73	23.00	28.00

Table 17. Low trait hostility men in the context of life stress

Hostile Attributions	β	*SE*	*P*	*ES*
Intercept	23.48	0.39	<0.001	0.99
Linear Time	-8.92	2.00	<0.001	0.76
Quadratic Time	3.27	1.00	<0.001	0.49
Life Stress	0.23	0.09	<0.05	0.44

Table 18. High trait hostility men in the context of life stress

Hostile Attributions	β	*SE*	*P*	*ES*
Intercept	27.15	1.33	<0.001	0.99
Linear Time	10.52	5.79	<0.10	0.34
Quadratic Time	-3.88	2.61	>0.10	0.16
Life Stress	0.01	0.13	>0.50	0.02

Table 19. Model 2b: Interaction of parenting stress with trait hostility on hostile attributions

	Men				Women			
Hostile Attributions	β	*SE*	*P*	*ES*	β	*SE*	*P*	*ES*
Intercept	23.39	1.73	<0.001	0.61	16.03	1.86	<0.001	0.44
Trait Hostility	1.70	0.35	<0.001	0.27	-0.10	0.50	>0.50	0.01
Linear Time	0.15	0.84	>0.50	0.02	1.24	0.87	>.10	0.16
Trait hostility	-0.31	0.20	>0.10	0.14	0.44	0.23	<0.10	0.13
Parenting Stress	0.14	0.04	<0.001	0.36	0.17	0.03	<0.001	0.52
Trait hostility	-0.02	0.01	<0.01	0.32	-0.01	0.01	> 0.10	0.15

Table 20. Descriptive stats for men with low trait hostility and parenting stress

	N	Mean	SD	Min	Max
Parenting Stress	32	53.91	12.60	36.00	85.00
Hostile Attributions	32	18.53	12.60	10.00	40.00
Trait Hostility	17	12.47	0.51	12.00	13.00

Table 21. Descriptive stats for men average trait hostility and parenting stress

	N	Mean	SD	Min	Max
Parenting Stress	98	64.50	18.43	36.00	113.00
Hostile Attributions	98	22.92	8.57	10.00	42.00
Trait Hostility	54	17.67	2.56	14.00	22.00

Table 22. Descriptive stats for men high trait hostility and parenting stress

	N	Mean	SD	Min	Max
Parenting Stress	21	73.24	15.14	43.00	102.00
Hostile Attributions	21	33.05	10.76	14.00	53.00
Trait Hostility	11	24.64	1.69	23.00	28.00

Table 23. Men with low trait hostility in the context of parenting stress

Hostile Attributions	β	*SE*	*P*	*ES*
Intercept	16.89	2.10	<0.001	0.84
Linear Time	1.17	1.46	>0.10	0.28
Parenting Stress	0.30	0.09	<0.01	0.69

Table 24. Men with average trait hostility in the context of parenting stress

Hostile Attributions	β	*SE*	*P*	*ES*
Intercept	21.84	1.43	<0.001	0.90
Linear Time	0.65	0.83	>0.50	0.08
Parenting Stress	0.17	0.04	<0.001	0.48

Table 25. Men with high trait hostility in the context of parenting stress

Hostile Attributions	β	*SE*	*P*	*ES*
Intercept	36.47	5.60	<0.001	0.93
Linear Time	-1.83	3.20	>0.50	0.17
Parenting Stress	-0.03	0.13	>0.50	0.26

Table 26. Model 3a: Life stress and depressive symptoms on hostile attributions

	Men				Women			
Hostile Attributions	β	*SE*	*P*	*ES*	β	*SE*	*P*	*ES*
Intercept	26.22	0.64	<0.001	0.88	24.88	0.62	<0.001	0.88
Linear Time	-5.75	1.32	<0.001	0.41	-10.71	1.35	<0.001	0.63
Quadratic Time	2.14	0.60	<0.001	0.41	3.88	0.63	<0.001	0.63
Life Stress	0.11	0.06	<0.05	0.34	0.16	0.05	<0.001	0.54
Depressive symptoms	0.16	0.06	<0.05	0.11	0.04	0.05	>0.50	0.04

Table 27. Model 3b: Parenting stress and depressive symptoms on hostile attributions

	Men				Women			
Hostile Attributions	β	*SE*	*P*	*ES*	β	*SE*	*P*	*ES*
Intercept	19.58	1.84	<0.001	0.52	17.33	1.82	<0.001	0.48
Linear Time	0.87	0.91	>0.50	0.06	1.49	0.91	>0.10	0.09
Parenting Stress	0.20	0.05	<0.001	0.41	0.16	0.04	<0.001	0.37
Depressive symptoms	0.14	0.12	>0.50	0.12	0.20	0.11	<0.10	0.19

Figures

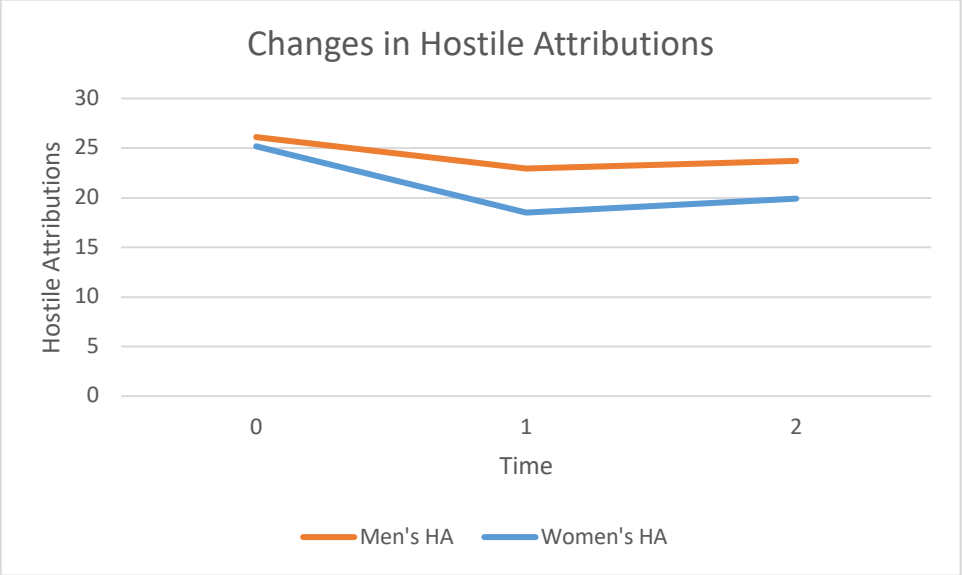

Figure 1. Graphical representation of changes in hostile attributions for men and women.

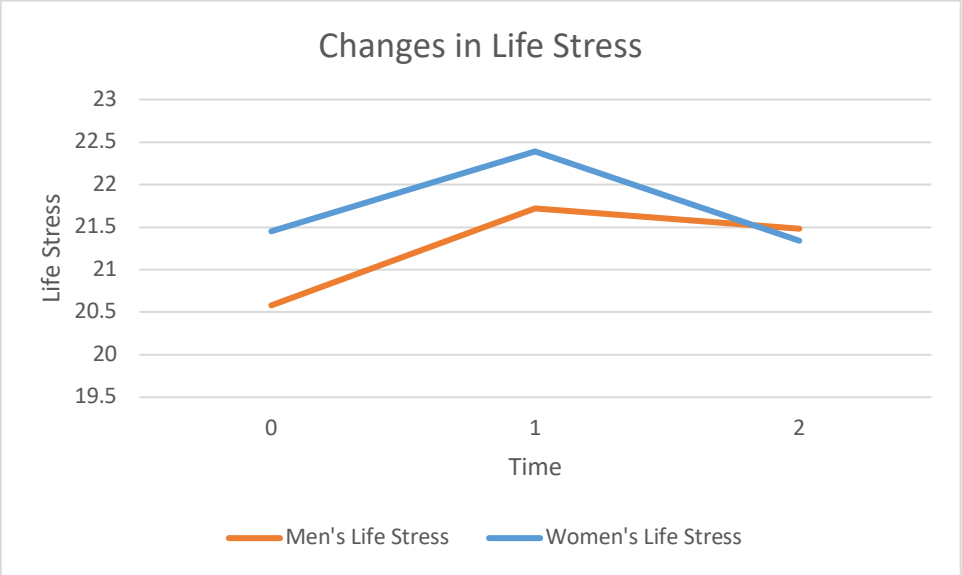

Figure 2. Graphical representation of changes in life stress for men and women.

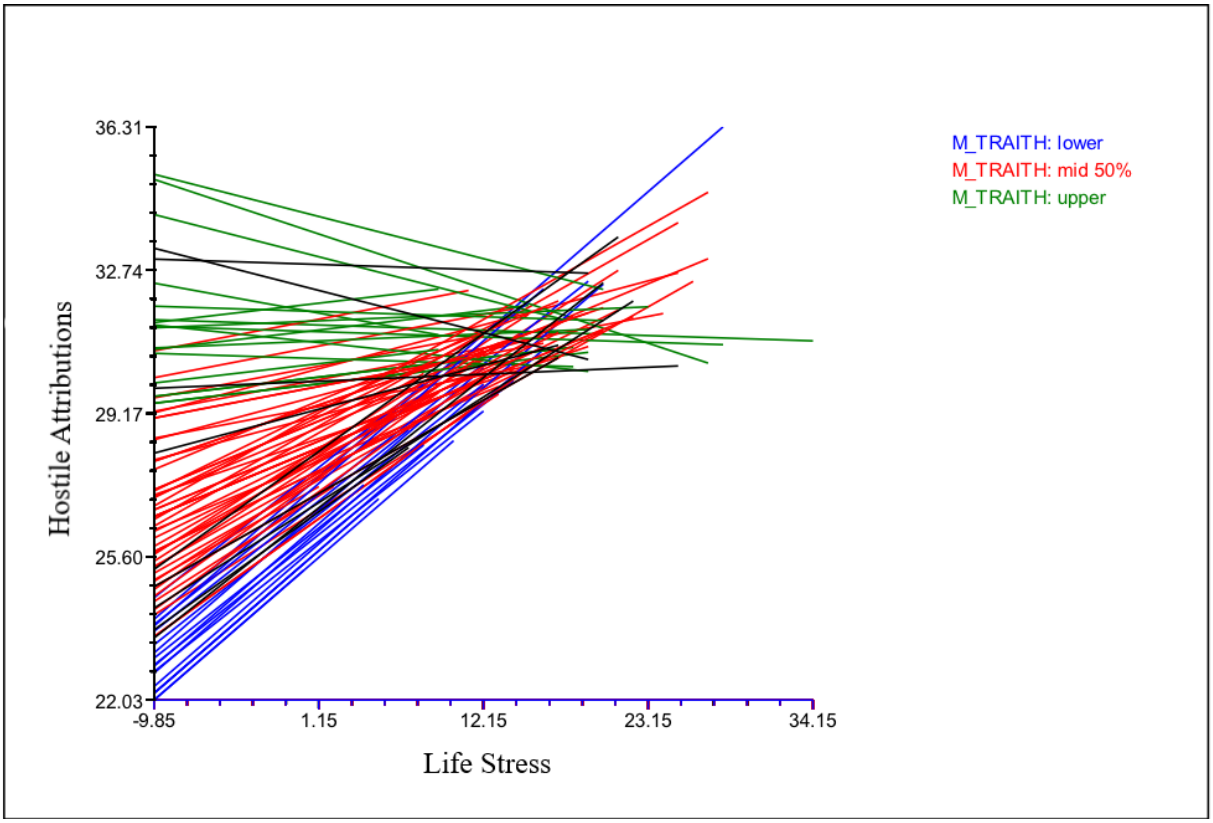

Figure 3. Graphical representation of the interaction between life stress and trait hostility in men.

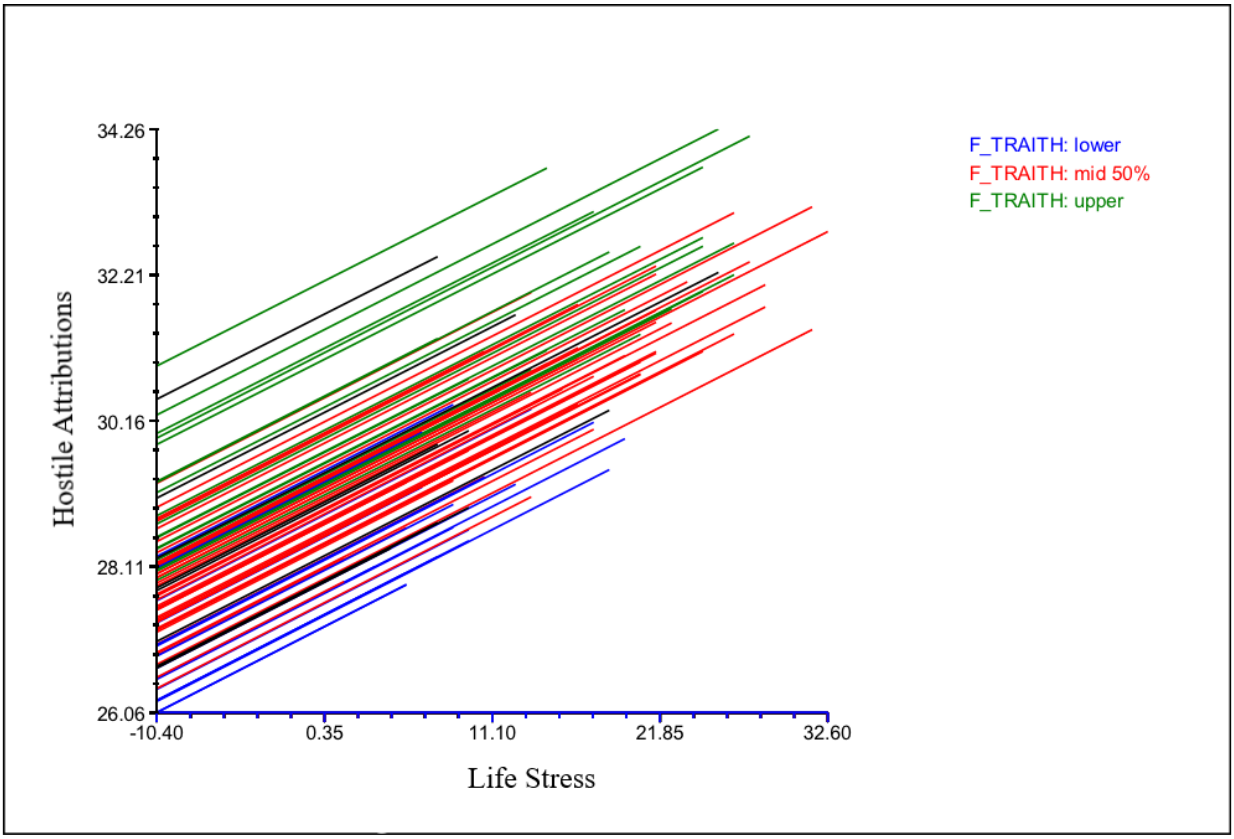

Figure 4. Graphical representation of the interaction between life stress and trait hostility in women.

Appendix A

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0. Never
1. Almost never
2. Sometimes
3. Fairly often
4. Very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you dealt successfully with irritating life hassles?
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6. In the last month, how often have you felt confident about your ability to handle your personal problems?
7. In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. In the last month, how often have you been able to control irritations in your life?
10. In the last month, how often have you felt that you were on top of things?
11. In the last month, how often have you been angered because of things that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix B

Anger

Four Aggression Factors

For each of the following statements, please indicate how characteristic they are of you? 1 (EXTREMELY UNCHARACTERISTIC OF ME) to 5 (EXTREMELY CHARACTERISTIC OF ME).

Created Version:

1. Once in a while I can't control the urge to strike another person.
2. I tell my friends openly when I disagree with them
3. I flare up quickly but get over it quickly.
4. I am sometimes eaten up with jealousy.
5. Given enough provocation, I may hit another person.
6. I often find myself disagreeing with people.
7. When frustrated, I let my irritation show.
8. At times I feel I have gotten a raw deal out of life.
9. If somebody hits me, I hit back.
10. When people annoy me, I may tell them what I think of them.
11. I sometimes feel like a powder keg ready to explode.
12. Other people always seem to get the breaks.
13. I get into fights a little more than the average person.
14. I can`t help getting into arguments when people disagree with me.
15. I am an even-tempered person.
16. I wonder why sometimes I feel so bitter about things.
17. If I have to resort to violence to protect my rights, I will.
18. My friends say that I`m somewhat argumentative.
19. Some of my friends think I`m a hothead.
20. I know that `friends` talk about me behind my back.
21. There are people who pushed me so far that we came to blows.
22. Sometimes I fly off the handle for no good reason.
23. I am suspicious of overly friendly strangers.
24. I can think of no good reason for ever hitting a person.
25. I have threatened people I know.
26. I have trouble controlling my temper.
27. I sometimes feel that people are laughing at me behind my back.
28. I have become so mad that I have broken things.
29. When people are especially nice, I wonder what they want.

Appendix C

Center for Epidemiologic Studies Depression Scale (CES-D), NIMH

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

	During the Past Week			
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7days)
1. I was bothered by things that usually don't bother me.				
2. I did not feel like eating; my appetite was poor.				
3. I felt that I could not shake off the blues even with help from my family or friends.				
4. I felt I was just as good as other people.				
5. I had trouble keeping my mind on what I was doing.				
6. I felt depressed.				
7. I felt that everything I did was an effort.				
8. I felt hopeful about the future.				
9. I thought my life had been a failure.				
10. I felt fearful.				
11. My sleep was restless.				
12. I was happy.				
13. I talked less than usual.				
14. I felt lonely.				
15. People were unfriendly.				
16. I enjoyed life.				
17. I had crying spells.				
18. I felt sad.				
19. I felt that people dislike me.				
20. I could not get "going."				

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomology.

Appendix D

ID# _____-H

Instructions: At one time or another, all people do or say things that their partners don't like. Examples of things your partner might say or do that you don't like might include:

Disagree with me	Flirt with another person	Annoy me	Make my job harder
Not do chores	Lose the temper	Ignore me	Start an argument
Be late	Handle our kids badly	Drink too much	Tell me what to do

People have many different ways of thinking about these types of problems.
Please rate how much you would agree, in general, that the following **reasons** for unpleasant behavior are true for **your partner** and his or her behavior for the **past two months**:

	Always True	Frequently True	Sometimes True	Occassionally True	Rarely True	Never True
1. My partner just won't listen to me.	1	2	3	4	5	6
2. My partner thinks that she or he is the boss.	1	2	3	4	5	6
3. My partner is headstrong.	1	2	3	4	5	6
4. My partner wants what he or she wants right away.	1	2	3	4	5	6
5. My partner tries to get me angry.	1	2	3	4	5	6
6. My partner tries to get my goat or push my buttons.	1	2	3	4	5	6
7. My partner always wants things her or his way.	1	2	3	4	5	6
8. My partner is very demanding.	1	2	3	4	5	6
9. My partner likes to see how far he or she can push me.	1	2	3	4	5	6
10. My partner won't do what I think is right.	1	2	3	4	5	6